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Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -MODEL-frame+_p2n.model -DEV=x1p
-Q-/cgn2_1/USPTO_spool/US09825414/runat_28012003_161741_26085/app_query.fasta_1.1294
-Q-/cgn2_1/USPTO_spool/US09825414/runat_28012003_161741_26085/app_query.fasta_1.1294
-DB-GenEmbl -QFMT-fastap -SUFFIX-p2n.rge -MINMATCH-0.1 -LOOPELT-0 -LOOPEXT-0
-UNITS-bits -START=1 -END--1 -MATRIX=biosum62 -TRANS=human40.cdi -LIST-45
-DOCALIGN-200 -THR_SCORE-pct -THR_MAX=100 -THR_MIN-0 -ALIGN-15 -MODE-LOCAL
-OUTFMT-pto -NORM-ext -HEARSIZE-500 -MINLENO -MAXLEN-200000000
-USER-US09825414_GCGN_1_14707_@funat_28012003_161741_26085 -NCPU-6 -ICPU-3
-NO_XLPXY -NO_MMAP -LARGEQUERY -NEG_SCORES=0 -WAIT -LONGLOG -DEV_TIMEOUT=120
-WARN_TIMEOUT=30 -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOP=6 -FGAPEXT=7
-YGAPEXT=0.5 -DELOP=6 -DELEXT=7
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Maximum Match 100%
Listing first 45 summaries
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Maximum DB
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length: 2000000000
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29: em_vi:*
30: em_htg_inv:*
31: em_htg_inv:*
32: em_htg_other:*
33: em_htg_mus:*
34: em_htg_pin:*
35: em_htg_rod:*
36: em_htg_vrt:*
37: em_htg_vrt:*
38: em_sy:*
40: em_htgo_hum:*
41: em_htgo_mus:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## a No. 160.5 160.5 150.5 155.5 155.5 155.5 155.5 155.5 155.5 155.5 155.5 155.5 169.5 149.5 148.5 148.5 148.5 147.5 14 Score Match 52498 5208050 208050 208050 208050 1473311 478526 112726 18700 40790 40790 207077 207077 20877 20877 208777 20877 20877 208777 208777 208777 208777 208777 208777 208777 208777 208777 208777 208777 208777 208777 208777 208777 208777 208777 208777 2 Length DB AP003000 AP006958 WTV039 AC006669 AP002995 SSEPFAA A24024 I57310 AE004597 SC2G5 MTV016 AB070949 AL646072 AE005333 SCE2 AC112724 AE0172724 AB011413 AE0171164 AE012164 AE000234 AE007019 D90775 D90774 AF232004 AF458051 AL646083 AE007164 MTV023 AE005780 SC4A7 BPEFHAB1 BPFHABFH I06606 AR204176 AF317649 AL646078 MTCY493 AF067776 07 AL646083 Raistonía AB007164 Mycobacte AL022022 Mycobacte AL023423 Streptomy AE012164 Xanthomon AE0007019 Mycobacte D90774 E.col1 geno AF317649 Rhodobact AL134347 Raistonía AF067776 Abiotroph AF003000 Mesorhizo AE006958 Mycobacterí AL646078 Raistonía AF067776 Abiotroph AP003000 Mesorhizo AE006958 Mycobacterí AF067776 Abiotroph AP003000 Mesorhizo AE006958 Mycobacterí AE0071942 Mycobacterí AE0071942 Mycobacterí AE0071951 Mesorhizo AF06787 Raistonía AE0071951 Mycobacterí AE0071951 Mycobacterích AE0071951 Mycobacterích AE0071951 Sequence 2 AE004597 Pseudomon AL03547 Streptomy AL021841 Mycobacterích AE007151 Mycobacterích AE007157 Raistonía AE00533 Escherich AE00533 Alcaligenes AL646077 Raistonía AE005710 Caulobact AE005710 Caulobact AE005710 Caulobact AE011413 Streptomy Continuation (8 of L31363 Alcaligenes AL646077 Raistonía AB011413 Streptomy Continuation (8 of L31363 Alcaligenes AL646077 Raistonía AB011413 Streptomy Continuation (8 of L31363 Alcaligenes AL646077 Raistonía M60351 B.pertussis X52156 Bordetella I06606 Sequence 1 AR204176 Sequence Description AF458051 AF232004 Pseudomor

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            Sequence update by submitter
On or before Mar 14, 2001 this sequence version replaced
g1:3228544, g1:790906, g1:3228541, g1:8037790, g1:11276506.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4 (bases 901 to 22404; 31672 to 51723)
Alfano,J.R., Charkowski,A.O., Deng,W.L., Badel,J.L.,
Petnicki-Cowieja_T., van Dijk,K. and Collmer,A.
The Pseudomonas syringae Hrp pathogenicity island has a tripartite mosaic structure composed of a cluster of type III secretion genes bounded by exchangeable effector and conserved effector loci that contribute to parasitic fitness and pathogenicity in plants
Proc. Natl. Acad. Sci. U.S.A. 97 (9), 4856-4861 (2000) U/\chicklet \( \chicklet \)
                                                                                                                                                                           Submitted (22-NOV-2000) Plant Pathology, Plant Sciences Bldg., Ithaca, NY 14850, USequence update by submitter 8 (bases 1 to 52498)
                                                                                                                                                                                                                                                                                                   Submitted (07-FEB-2000) Dept. Parkway, Las Vegas, NV 89154, 7 (bases 1 to 52498)
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AF232004 AF061028 AF061029 AF232006 L41861
AF232004.3 GI:13325077
                                                                                                  Submitted (05-MAR-2001) Plant Pathology, Plant Sciences Bldg., Ithaca, NY 14850,
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                                                                                                                                                                                                                                                                                                                                                                  Alfano, J.R. and Collmer, A. Direct Submission
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The HrpZ proteins of Pseudomonas syringae pvs. syringae, and tomato are encoded by an operon containing Yersinia y
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Pseudomonas syringae pv. tomato strain DC3000
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complement(3939..4664)
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TELSPGDQSYVFGYGYSFTEGYTLVAKKFQSSAS"
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PGSSILIDGGGEAEMVARHDALFELRFAEEVLPLLDRVGHMPLPPYIDRPDEGADRER
YQTVYAQRAGAVAAPTAGLHFDQPLMEAIAAKGVETAFVTLHVGAGTFQPVRVEQIED
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5571. .6410
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2343. .2753
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complement(6656.
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                                                                                                                                                                                                                                                                                                                                                          /gene="tnpA"
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45038		45097	
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320	. IleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeu	30J	Qy
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240	ASDALAVALARGTHYVALLEUALAPTOALALEUALASETARGPFOALAVAIGINGLYALA	221	4d
45398		45457	40
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180	. GlyalametAspGlnValGlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyr	161	рь Оу
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80 45878	ProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGlnIleThrAla	61 45937	DP 63
60 45938	GluIleAsnAlaIleAlaAspTyrLeuThrAspHisValPheAlaAlaHisLysLeuPro	41 45997	Db Qy

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and Greenberg,J.T.
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          /product="type III effector HopptoAlPma"
/product="type III effector HopptoAlPma"
/protein_id="AAL84253.1"
/db_xref="GI:19071506"
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/tabslation="MYINKSISSOSSIGTESFHSAQSVASSSVRVLSEAEQTKLNDIT
HYLTDHVFAAHRLPVNDINVDQDVVHAHNVEIGKIISARALRLLDEGETALSIGETFA
KAEKFDRMASAASGALRATPFAAASVLOYMQPAINKGDWLFTPLKFLAPLVSGALSGV
MDQVGTGVMNRATGDLHYLSTAPEKLHDAMAASVKRHKPGVMRQAADLGIAVQTYTAR
NALRTYLAPALASRPAVGGAVDISVSAAGSLVANAGFSERMHTVQAADLGIAVQTYTAR
NALRTYLAPALASRPAVGGAVDISVSAAGSLVANAGKRVAGLPLDVATDGLKAVRSLV
MDQVGTGVMNRATGDLAYRAIKSASYSGAALNAGKRVAGLPLDVATDGLKAVRSLV
SATSLMQNGLVMAGGFAGVGKLQEMATKNITHPATKAAVSQLTNLAGSAPVFSAWTTA
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                                       GACAAACAACCCAAGGCAGACTTGAGTGAAGAAACCGACTGGCTCGATGCCTACCGGGCG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1534
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1414
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1174 ATCAAATCCGCCAGCTACTCCGGTGCAGCGCTCAACGCTGGCAAGCGTGTCGCGGGTCTG 1233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           478 GluIleProPheArgProMetArg 485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               421
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GluAlaIleThrHisThrGlyAlaSerLeuArgAsnThrValAsnAsnLeuArgGlnArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTTGCAGGTTCAGCCCCGGTTTTTTCAGCCTGGACAACGGCAGCGGTGGCGACGGACCCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GAAAGGATTGCCACTACCGGGGCGTCCTTGCGTGACACC-----TTGCGCCGTCGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MetAlaThrLysAsnIleThrAspProAlaThrLysAlaAlaValSerGlnLeuThrAsn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACGGTGCGTGAGCCTGATATCGAGGAGGGCGGTGTTGCCCGCGGGCACGGGTTCGCCGGTT 1704
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ProAlaArgGluAlaAspIleGluGluGlyGlyThrAlaAla-----SerProSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ACCAGCGCGCTGGCCGACAAAACCGTCAAGCTGGCCAAGGCGGGCATTGACGCGAGCGCC 1593
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThrThrAspPro 400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CTGATGCAAAACGGTCTGGTAATGGCGGGTGGTTTTTGCCGGTGTGGGTAAGTTGCAGGAA
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             Submitted (05-DEC-2001) Genoscope and CNRS UMR-8030, 2 rue Gaston Submitted (05-DEC-2001) Genoscope and CNRS UMR-8030, 2 rue Gaston Cremieux, CP5706, 91057 Evry Cedex, France, Laboratoire de Biologie Moleculaire des Interactions Plantes-Microorganismes INRA-CNRS, BP27, 31326 Castanet-Tolosan Cedex, France, Fondation Jean Dausset-CEPH, 27 rue Juliette Dodu, 75010 Paris, France, LMGM CNRS 118 Route de Narbonne, F 31062 Toulouse Cedex 4, Genoscope and INRA UNGV, 2 rue Gaston Cremieux, CP5706, 91057 Evry Cedex, France, Laboratoire de Biometrie et Intelligence Artificielle INRA, BP27, F31326 Castanet-Tolosan Cedex. Laboratoire de Genetique Cellulaire INRA, BP27, F31326 Castanet-Tolosan Cedex
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Salanoubat,M., Genin,S., Artiguenave,F., Gouzy,J., Mangenot,S., Arlat,M., Billault,A., Brottler,P., Camus,J.C., Cattolico,L., Chandler,M., Choisne,N., Claudel-Renard,C., Cunnac,S., Demange,N. Gaspin,C., Lavie,M., Moisan,A., Robert,C., Saurin,W., Schiex,T., Siguier,P., Thebault,P., Whalen,M., Wincker,P., Levy,M., Weissenbach,J. and Boucher,C.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                208050 bp
Ralstonia solanacearum GMI1000 m
segment 8/11.
AL646083 AL646053
Christian.Boucher@toulouse.inra.fr
                                                                                                                                                                                                                                                                                                                                            Direct Submission
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                                                                                                                                                                                                                                                                                                                                                                                Boucher, C.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                    Unpublished
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                                                                                 /function="miscellaneous; unknown"
/note="Product confidence: putative
Gene name confidence: hypothetical
predicted by Codon_usage
predicted by FrameD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDCTARVEQTLSELFEREVKVFLVPTGTAANALCLGAMTPPWGNVYCHPSSHINNDE
CGAPEFYTNGAKLVAVDGPSAKIDVEKLRAATRVKVGDVHSTQPACVSLTQATEVGSL
YTLNEIEAIGQLCKDARIKLQMDGSRFANALVSLGCSPAAMTWKAGVDALSFGATKNG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gene name confidence: hy predicted by Codon_usage predicted by Homology predicted by FrameD"
                                                                                                                                                                                                                                                                                                                                      /evidence=not_experimental
complement(2462. .3139)
/gene="RSp1117"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SFATTADDVDNLLRHMKAAAAGPSADTHATA" 2257. .5019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="PUTATIVE LOW SPECIFICITY L-THREONINE PROTEIN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /translation="MADSVQYQQVADVPGLVLSAGRFSQFSFERHFHLDFHVGLVTAG
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EHTKGALSPAQWQRVRDYCF9HAGERITLDDLASLCALGRFQFLKQFKQTVGMTPHAW
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135. .947
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                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="ACUR or RS05503
predicted by FrameD"
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ALRLARGLEGMHGASVLGATEANTVFCRLPSTLTENLLQAGFRFYHNRWEPNVVRFVT
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/transl_table=11
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/note="RS05504"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LVRLRLEQACSLLSSRSKATAEVAQEVGFYDQSHFNRAFRQAFGVAPSHYQS"
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/function="miscellaneous; not classified regulator"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="RSp1115"
                                                                                                                                                                                                                                                                           complement(2462. .3139)
                                                                                                                                                                                                                                                                                                               /note="RS05502"
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                                                          /codon_start=1
                                                                                                                                                                                                                                          /gene="RSp1117"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /codon_start=]
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /function="small molecule metabolism; degradation; amino
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             organism="Ralstonia solanacearum"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         complement(3188. .3595)
/gene="RSp1118"
/note="RS05501"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement(3673. .4161)
/gene="RSp1119"
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AADNTYHSLCVQPVIVLSGDQETLKAVHRRALERKVPHGLYIEDMFSTGHDAANRAVF
AEHGPDSARVVGIALREEKKIVDKITKGARMHP"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     predicted by Homology predicted by FrameD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               complement(3188. .3595)
/gene="RSp1118"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ETRIGAIDDHVIIRIENGRLLDTDYVVHFPIPMKHAWDNVIYTCSVQLLFRDEAQVDE
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DPQPMHLDETAARDTVFGELVGSGWQTLAVTMRLLLDARLLGGTPIVGAELRDIRFHA
                                                                                                                                                                                                                                                                                                                  predicted by
                                                                                                                                                                                                                                                                                                                                    Gene name confidence : hypothetical
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  /gene="RSp1121"
/note="RS05498"
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                                                                                                                                                                                                                                                                                               predicted by Homology
                                                                                                                                                                                                                                                                                                                                                 /gene="Rsp1120"
/function="miscellaneous; hypothetical/global homology"
/note="Product confidence : hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="RSp1120"
/note="RS05499"
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/note="Product confidence : hypothetical
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ADNHGVVLHPHSDEVWIAHPFSAAPTTCVVKSGNRKWWGNCAWCALGLVHLAGGSATI
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/protein_id="CAD18268.1"
/db_xref="GI:1/431591"
                                                                                    PMRPGDVLRARAEVIAIRPSKSRPDRGFMDARVTTTNSEGVTLVTQRWSLVVPRRPDF
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/note="Product confidence : hypothetical
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/db_xref="GI:17431592"
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                                                                                                                                                                                                                                                                                                                    heAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuP 145
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/gene="RSp1121"
/function="miscellaneous; not classified
/function="miscellaneous; not classified
/note="Product confidence : putative
Gene name confidence : hypothetical
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AGVGIGTLYRHFPTRDALIDEIYRDEGSRLAEAARQLSEDQPPLEAVRQWLLLFVGYL
ANKQIRADVLNCMTDCSERLCTLSGEVLIETLAQLERAKQSGAIGLAVEPLDLLSAV
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/note="RS05497"
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/protein_id="CAD18272.1"
/db_xref="GI:17431595"
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  Mycobacterium tuberculosis Mycobacterium tuberculosis
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Whole genome comparison of Mycobacterium tuberculosis clinical
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/note-"This region contain is not the result of a segmental segment of a segmen
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                                                                                                                                                                                                                                                                                                                                                                   complement(8683
/gene="MT3615.2
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authentic frameshift"
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complement(114. .1662)
                                                                                                                                       /product-"fatty-acid-CoA
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/db_xref-"GI:13883470"
                                                                                                                                                                                                                                                                    similarity; putative"
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ORIGIN
  Percent Similarity:
Best Local Similarity:
                                                                                 Alignment Scores: Pred. No.:
                                                                                                                                                                                               BASE COUNT
                                                             Score:
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GGAAGAGGAGGAAGTGGTGGKHTGTTGNAGVGGAGGAGGAGGAGGAGADNPTGTGGTGG
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GGDGGAGGAGADADQPGATGGTGFAGGAGGAGGAGGSSGAGGTNGSGGAGGTNGSGGA
GGTGGQGGAGGAGADNPTG IGGTGGDGGTGGAAGAGAGGAAGTGGTGGMIGTTG
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5217 c 6167 g 1634 t 1 others
                                                                                                                                                                                                                                                                                                       GDAMARPLYDALYKGNDYDLSSLFLLASTAALFSPSIKEKLLELLPNRVITDSIGSSE
TGFGGTSVVAAGQAHGGGPRVRIDHRTVVLDDDGNEVKPGSGMRGVIAKKGNIPVGYY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(13599. .15245)
/gene="MT3616"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(13599.
/gene="MT3616"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MMGAAATGSGHPARKVDMGRLSCLSGAEPTSMWMEVRHGCSRAS RNSCGGFAEAGPHLLDGHRAALPGVAIG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(13384. .13602)
/gene="MT3615.4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complement(13384. .13602)
/gene="MT3615.4"
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/protein_id="AAK47974.1"
/db_xref="GI:13883471"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="similar to GB:AL123456; identified by sequence
similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="MT3615.3"
9385. .13038
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GGDGADGGAATGVGDGGDGGNGGNGGTGVGSPGGLGGAGGTGGLGGAGAGGGADG
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                                                                                                                                                                                                                                                                        KDEKKTAETFRTINGVRYAIPGDYAQVEEDGTVTMLGRGSVSINSGGEKVYPEEVEAA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /codon_start=1
/transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              similarity; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="MT3615.3"
                                                                                                                                                                                                                                                 LKGHPDVFDALVVGVPDPRYGQQVAAVVQARPGCRPSLAELDSFVRSEIAGYKVPRSL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /product="hypothetical protein"
/protein_id="AAK47975.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="identified by Glimmer2; putative"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           note="similar to GP:2645200; identified by sequence"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              db_xref="GI:13883472"
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11.5
168.00
37.67%
26.02%
                                                        Length: Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .15245)
  Conservative: Mismatches:
  15311
96
43
132
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nLeuArç      CCTTTCC	444ThrHisThrGlyAlaSerLeuArgAsnThrValAsnAsnLeuArgGlnArgProA :::         :::	Ωy ,
	425 laaspGlnThrValLysLeuAlaLysThrValLysAspMetGlyGlyGlyAlaIle	Qу ,
( ) ** (0	417AlaSerSerThrThrGlyTyrValA 6081 CCGCCGGCCCGCCGGTTCCGCCATGCCCCGTCGCCAGCGCCGGTTGCGCCGGAGATG	Ωy ,
O	398 hraspProAlaValLysLysAlaGluSerPheIleGlnAspThrValLysSerThr ::::::         :::::::::::::::::::	Qy .
C P	378 euThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThrT	ОУ :
a ×	358 euGlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAlaAlaValSerGlnL	Qy :
() 5	339 erSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysL ::::: :::      :::	Qу ;
н н	320 euProLeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaS ::	Qy 3
ଦ — ⊢	300 laTleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyL 	Qу :
i	6419	Db 64
Tr	28 ysaspLysGluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysA	Qy
ფ <u>_</u> გ_	261LeuLeuSerValGlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuL     :::	Qy 3
60	244 1yValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArg	Qy 3
35	224 rgThrValLeuAlaProAlaLeuAlaSerArgProAlaValGlnGlyAlaValAspLeuG	Qу 3 Db 65
Se	204 laArgGlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaVa	Qу 2 Db 65
ရှိ နှ	184 erProAspArgLeuHisAspAlaMetAlaAlaSerValLysArgHisSerProSer	Qy 1 Db 66
Leu	164 spGlnValGlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSerAlaS	Qy 1 Db 66
A1	145 ProAlaProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetA	Qy 1 Db 67
	825-414-7 (1-486) x AE007164 (1-1	
	Match: 6.97% Indels:	Query N

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VERSION
KEYWORDS
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MEDLINE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CCCGCGCCGCCGCTGTTGCCGGCGGTGCTGCTGGTGACGCCTGCTCCACCGTCGCCGCCCT 5845
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   been renumbered from the original cosmid submissions but the old gene designations are in brackets after the new gene numbers. Gene prediction was based on a Hidden Markov Model of TB genes implemented in TBparse (Krogh) supplemented with visual inspection of positional base preference in codons, especially where there is an increase in the observed/expected third position G + C. CAUTION: In some cases we may not have predicted the correct initiation codon. Where possible we choose an initiation codon (atg, gtg, or ttg) which is preceded by an upstream ribosome binding site sequence (optimally 5-13pp before the initiation codon). If this cannot be identified we choose the most upstream
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     47852 bp DNA linear Mycobacterium tuberculosis H37Rv complete genome; AL022022 AL123456 AL022022.1 GI:3261854
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Submitted (11-JUN-1998) Submitted on behalf of the Mycobacterium tuberculosis sequencing and mapping teams, Sanger Centre, Wellcome Trust Genome Campus, Hinxton, Cambridge CB10 15A Unite de Genetique Moleculaire Bacterienne, Institut Pasteur, 28 rue du Docteur Roux, 75724 Paris Cedex 15, France E-mail: parkhill@sanger.ac.uk On Jun 27, 1998 this sequence version replaced gi:2924430.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Cole, S.T., Brosch, R., Parkhill, J., Garnier, T., Churcher, C., Harris, D., Gordon, S.V., Eighmeier, K., Gas, S., Barry III, C.E., Tekala, F., Badcock, K., Basham, D., Brown, D., Chillingworth, T., Connor, R., Davies, R., Devlin, K., Fellwell, T., Gentles, S., Hamlin, N., Holroyd, S., Hornsby, T., Jagels, K., Krogh, A., McLean, J., Moule, S., Murphy, L., Oliver, S., Osborne, J., Quail, M.A., Rogers, J., Rutter, S., Seeger, K., Skelton, S., Squares, S., Sqares, R., Sulston, J.E., Taylor, K., Whitehead, S. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complete genome sequence
Nature 393 (6685), 537-544 (1998)
98295387
9634230
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Mycobacterium tuberculosis H37Rv
Bacteria; Pirmicutes; Actinobacteria; Actinobacteridae;
Actinomycetales; Corynebacterineae; Mycobacteriaceae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2 (bases 1 to 47852)
Parkhill, J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                available on the World Wide Web.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Deciphering the biology of Mycobacterium tuberculosis from the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Details of M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Barrell, B.G.
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1 (bases 1 to 47852)
                                                                                                                                                                                                                                                                                                                                                                                                                                                         initiation codon.
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                                                                          /db_xref="taxon:83332"
/clone="Y13E12"
47752. .>47852
          /organism="Mycobacterium tuberculosis H37Rv"
/strain="H37Rv"
                                                                                                                                                                                                                /organism="Mycobacterium
                                                                                                                                                                                                                                                                               /db_xref="taxon:83332"
                                                                                                                                                                                                                                                                                                                                           /organism="Mycobacterium tuberculosis H37Rv
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                                                                                                                                                                                                                                                                                                                                                                                                                     Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tuberculosis sequencing at the Sanger Centre are
                                                                                                                                                                                                            tuberculosis H37Rv"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note="Rv3495c, (MTV023.02c), len: 384. lprN, similar to Mycobacterium tuberculosis proteins MTCT28.13 (390 aa) and MTCT28.13 (390 aa) and MTCT28.13 (390 aa) and mTCT19H5.29 (402 aa) and (MTV051.08). Probably lipoprotein, contains possible signal sequence and appropriately positioned PS00013 Prokaryotic membrane lipoprotein lipid attachment site. FASTA scores: gpl297050/MTCT28_13 (390 aa) opt:653 z-score: 762.1 E(): 33.6% identity in 363 aa overlap; and 297182/MTCY19H5_29 (402 aa) opt: 572 z-score: 667.9 E():
                                                                                                                                                                                                                                                                                                                                                                 /db_xref="Sptrembl:053540"
/translation="MMRIWLRAIILTASSSALLAGCOPGGLNSLPLPGTAGHGEGAYSV/translation="MMRIWLRAIILTASSSALLAGCOPGGLNSLPLPGTAGHGEGAYSVTVEMADVATLPQNSPVMVDDVTVGSVAGIVAVQRPDGSFYAAVKLDLDKNVLLPANAVTVEMADVSQTSLLGSLHYELAPPTDRPTGRLVDGSRITEANTDRPPTEEVFSALGVVVNKGNVGALEEIIDETHQAVAGRQAQFVNLVPRLAELTAGLNRQVHDIIDALDGLNRVSAILARDKONLGRALDTLPDAVRVLNQNNDHIVDAFAALKELTMVTALTKVDFGEDLLARDKONLGRALDTLPDAVRVLNQNNDHIVDAFAALKELTMVTATTABETG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1.1e-29; 31.8% identity in 362 aa overlap. TBparse score is 0.897"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note="possible RBS for Rv3494c"
complement(1706. .2860)
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VGVIYHKSIEQLLVVFPALFAAIITSAGGVPQDEGAKLDFKIDLHDPPPCMTGFLPPP
LVRSPADESVREIPRDMYCKTAQNDPSTVRGARNYPCQEFPGKRAPTVQLCRDPRGYV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation="MIDRLAKIQLSIFAVITYITLSVMAIFYLRIPATFGIGTYGVSA
DFVAGGGLYKNANVTYRGVAVGRVESVGLNPNGVTAHMRINGGTAIPSNVTATVRSVS
AIGEQYIDLVPPENPSSTKLENGFRIQRQNTRIGQDVADLLRQAETLLGSLGDTRLRE
LLHEAFIATNGAGPELARLIESARLLVDEANANYPQVSQLIDQAGPFLQAQIRAGGDI
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complement/
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                                                                                                                                                                                                                                                                                                            TFFTTAYFDPNMAHMDEILNPPDFLIGELANLSGQAADPFKIPPGTASGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /product="lprN"
/protein_id="CAA17732.1"
/db_xref="GI:2924432"
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/protein_id="CAA17731.1"
/db_xref="GI:2924431"
                                                                                                                                      complement(2857.
                                                                                                                                                                                                                                                                                                                                           KDLYSIVKALNDDRKDFVTSLQLLLTFPFPNFGIKQAVRGDYLNVFTTFDLTLRRIGE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PVGTNPWRGPPIPYGTEVTDGRNILPPNKFPYIPPGADPDPGVPIVGPPPPGQVAGPG
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                                                                                                                                                                                                         /note="PS00013 Prokaryotic
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note="Rv3496c, (MTV023.03c), len: 451. Unknown but
                                                                                                                                                                                                         membrane lipoprotein lipid
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Query Match:
                                                           Percent Similarity:
Best Local Similarity:
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                                                                                                                                                          No::
                                                                                                                                                                                      Scores:
                                                                                                                                                                                                                                                                                                     similar to Mycobacterium tuberculosis proteins MTCI28.10 (346 aa), MTCY19H5.32c (346 aa) and MTV051.05. Hydrophobic region at N-terminus. FASTA scores: 279050/MTCI28.10 (346 aa) opt: 755 z-score: 883.6 E(): 0; 36.8% identity in 340 aaoverlap; and 2971821/MTCY19H5.32 Mycobacterium tuberculosiscosmi (275 aa) opt: 699z-score: 820.1 E(): 0; 47.0% identity in 249 aa overlap. TBparse score is 0.878"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                similar to Mycobacterium tuberculosis proteins MTCY19H5.31 (481 aa), MTCI28.11, (515 aa) and MTV051.06. Hydrophobic region atN-terminus. FASTA scores: 297182|MTCY19H5_31 (481 aa) opt:611 z-score: 667.7 E(): 1.1e-29; 32.5% identity in 332aa overlap; and 297050|MTCI28.11 (515 aa) opt: 587 z-score:641.2 E(): 3.3e-28; 30.1% identity in opt:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          similar to Mycobacterium tuberculosis proteins MTCI28.12 (530 aa), MTCY19H5.30c (508 aa) (MTV051.07). Hydrophobic region at N-terminus. FASTA scores: 297050 MTCI28.12 (530 aa) opt:838 z-score: 711.0 E(): 4.3e-32; 35.1% identity in 473 aaoverlap; and 297182 MTCY19H5.30 (508 aa) opt:821 z-score:697.0 E(): 2.6e-31; 35.1% identity in 453 aa overlap.TBparse score is 0.891"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="MLNRKPSSKHERDPLRTGIFGLVLVICVVLIAFGYSGLPFWPQGKTYDAYFTDAGGIFPGNSVYVSGIKVGAXSAVSIASAKNTSYVDRSIYVGDQSLAA
IRTDTILGERSIAVSPAGSGKSTTIPLSRTTTPYTLNGVLQDLGRNANDLNRQFGPA
LNVFTQALHDATPQVRGAVDGLTSLSRALNRRDEALQGLLAHAKSVTSVLSERABQVN
KLVEDGNQLFAALDARRAALSALISGIDDVAAQISGFVADNRKEFGPALSKLNLVLAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       opt: 587 z-score:b41.2 k(): 3.3e 20, 335 aa overlap. TBparse score is 0.889"
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/gene="Rv3496c"
/note="possible RBS for
complement(4209. .5282)
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NDFAQTLSDQSENIEQVLHVAGPGITNFYNIYDPAQGTLNGLLSIPNFANPVQFICGG
SFDTAAGPSAPDYYRRAEICRERLGPVLRRLTVNYPPIMFHPLNTITAYKGQIIYDTP
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YFTSAVGLYPGDQVRYLGVPVEDIDMLERFSSDVKITMSVSKDVKVPVDVQAVLMSPN
LVAARRIQLTPVYTGGAVLDDNGRIDLDRTAVPVEWDBVKSGLITRLAADISPAGEED,
GPLGAAINQAADTLDGNGDSLHNALRBLAQVAGRLGDSRGDIFGTVKNLQVLVDALSE
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/protein_id="CAA17733.1"
/db_xref="GI:2924433"
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/protein_id="CAA17734.1"
/db_xref="GI:2924434"
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                                                                                                                                             CCGACGGCACCAGCCGCCATCTCCGCCGTCGCCGCCATTGCCAGCGATACCGTTGGCG
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                                   laArgGluAlaAspIleGluGluGly-----
                                                                        CCCGGAGTGGCACCGGCCCCC---CGCGCCCGCGTCTCCGCCCTTTCCGCCGCTGCCG
                                                                                                                                                                               laAspGlnThrValLysLeuAlaLysThrValLysAspMetGlyGlyGluAlaIle----
                                                                                                                                                                                                                                                                                                                             hrAspProAlaValLysLysAlaGluSerPheIleGlnAspThrValLysSerThr----
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                                   -----GlyThrAlaAlaSerP 476
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Nierman, W.C., Feldblyum, T.V., Laub, M.T., Paulsen, I.T., Nelson, K.E., Eisen, J., Heidelberg, J.F., Alley, M.R., Ohta, N., Maddock, J.R., Potocka, I., Nelson, W.C., Newton, A., Stephens, G., Phadke, N.D., Ely, B., DeBoy, R.T., Dodson, R.J., Durkin, A.S., Gwinn, M.L., Haft, D.H., Kolonay, J.F., Smit, J., Craven, M.B., Khouri, H., Shetty, J., Berry, K., Utterback, T., Tran, K., Wolf, A., Vamathevan, J., Shetty, J., Berry, K., Utterback, T., Tran, K., Wolf, A., Vamathevan, J., Shetty, J., Berry, K., Utterback, T., Tran, K., Wolf, A., Vamathevan, J., Shetty, J., Barry, K., Utterback, T., Tran, K., Wolf, A., Vamathevan, J., Shetty, J., Shapiro, L. and
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Caulobacter crescentus CB15
Bacteria; Proteobacteria; alpha subdivision; Caulobacter group;
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Nierman, W.C., Feldbly
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21173698
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Glimmer2; putative"
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SCYTAISAVVKAEMFPAEIRALGVALPYALANVLFGGTAEMVALAFKHENLESTFYVY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FKRPAQSETLSRGQIISAGAFLSLTIASGVVGLMGGPLAKAGQYLGAAFLVLFFVSLI
VPLIRRHPRESLLIMGLTAGGSLTFYVYTTYMQKFLVNTAGFSKAQASEISALSLIAF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /product="major facilitator family transporter"
/protein_id="AAK23003.1"
/db_xref="GI:13422311"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="CC1019"
/note="identified by match to
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QVLQGQGQAIIKDGATLQGEDNLTELRAQATHWGAHVLPIWNALGV"
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/db_xref="GI:13422309"
                                                                                                                              /product="conserved hypothetical protein"
/protein_id="AAK23005.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note="identified by Glimmer2; putative"
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LTTLPRVKGAVIGTLWAIKIRKAEDAPS"
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                                                                                               /protein_id="AAK23005."
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                                                                                                                                                                                            /transl_table=11
                                                                                                                                                                                                                              /codon_start=1
                                                                                                                                                                                                                                                            note="identified by Glimmer2; putative"
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Percent Similarity:
Best Local Similarity:
Query Match:
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                                                US-09-825-414-7 (1-486) x AE005780
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  10
ProProValThrAlaThrAsp-----SerPheArgThrAlaSerAspAlaSerLeuAla 27
                                                                                                                                                                                                                                                                                                                                                                   /translation="malvliaalaliaidraslpqapsrqalldkakaydvrirrdew

GVPHIGRTDADAAFGLGYAGSEDDFDTLQDVVLATRGVLARGKAGAAPTDVVVSIL

EVWPTVDKHYABLPABELA IMEA YADGVSLTYAKHPEKAKPGLLPVTGKDVAAGFISK

OPFFYGLDGELRRITAFATKGPPPKGSNGLATAPSRSVDGATRLLVNSHQPYTGPVAW

TEAVVQSGQGWHVAGGFFGSSPFMLHGHNATLGWANTVSKPDLVDVYRLTINPANKNQ

YRLDGQWKDFDKRYVTLRVKLLGPIVLPVKRAVLIRSAHGFVLETDHGVFAIRYAGNGE

WRQPLQYWRLNHARATVEDWRAALATHAIPSLNYVYADAAGNIGFVHNGQYPNRRAKAD

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WGGVLPGDRSDLIWQGYLPVENSPQLWNPKSGLVFNSNNTPFEASEAADNLKPADFPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="CC1024"
complement(7519. .8073)
/gene="CC1024"
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RGDILMFEDTGYQGRVYEVVODTPDLDIARFNDRASSIRIVRGQWEICEHANYQGRCS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="WRKTTFLIAGGALTLLATQALAQDRDWDRRDHRSEQRDDRYDRR DDRRDDRRDRRDRRGGGGVLFEHRDFYGDARPIRGDMPDLARIGFNDRVSSMRISRGAWQ FCEHAXFQGRCWYLYDYDGYLLPNRQNDRFSSVRRVR" complement(7519. .8073)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product-"hypothetical protein"
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/translation-"MLGVARGAADSLAGGRHIAAHALDRVARRNQQRRGGHGEDDELA
/translation-"MLGVARGAADSLAGGRALFSELGGPS"
complement(7092..7508)
                                                                                                                                                                                                                                                                                                                         SMGLQANMTNRAWRALETYGADRALTDASFRAHKFDVAFSDRSSVMAMVGEVLAVDPK
GDADLAEAQRILRAWDKRADRTNRGAALAALMSQPILFANTNGDPAPAPIDSLRAAIK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /transl_table=11
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complement(8216. .10285)
/gene="CC1025"
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/gene="CC1025"
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/protein_id="AAK23007.1"
/db_xref="GI:33422315"
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/gene="CC1023"
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6863. .7117
                                                                                                                                                                                                                                                                                                     TLKTHFGRLDPEWGEVNRIRRGTVDLPIDGAADTFRSVWGKPQKDGTTTADGGDTFVM
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/note="identified by match
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                                                                                                                   20.7
162.50
35.32%
22.55%
6.74%
                                                (1-14131)
                                                                                                                      Length:
Matches:
Conservative:
Mismatches:
Indels:
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301	sGluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIle::::::            :::	282	Qy
282 12559	rArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLy	266 12618	Qy Db
266 12619	rMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeuSerValGlnSe	246 12666	Qy Db
246 12667		231 12726	Qy Db
230 12727	TTYTSerAlaArgAsnAlaValArgThrValLeuAlaProAla	216 12786	Qy Db
216 12787	AlaArgGlnValLeuAspThrGlyVal-AlaValGlnTh	204 12846	Qy Db
203 12847	SerProAspArgLeuHisAspAlaMetAlaAlaSerValLysArgHisSerProSerLeu	184 12885	Qy Db
183 12886	ArgAlaThrGlyAspLeuHisTyrLeuSerAla	173 12942	Qy Db
12943	CCG	12945	Db
172	${\tt ProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAsp}$	153	Qγ
152 12946		146 13005	4d 60
13006	ACGGGCGGAACCCCGCCCGGCCAAGCTGCCGGCCCGCACCTGGCCGCCGCGCGAACCCGCGCGAAGCTGCCGGCCG	13065	Db
13066	TGCTGCGCGAGCAGGAGTTGGTGGCCATGGACT	13125	ф
135	AlaThrProPheAlaMetAlaSerLeuLeuGlnTyrMetGln	122	Qy
121 13126	AlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeuArg::::	10 <b>4</b> 1318 <b>5</b>	Qу Дъ
103 13186	ATCTACCTGATCGCCCTGGCCATGCTGGTGAAGCCCGACACCGTGCCGGGCCTGTTCAAG	13245	Оу Дъ
95 13246	IleGluThrArgAlaSerArgLeuHisPheGluGlyGluThr	13305	Дb
	SerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGlnIleThrAlaLeu :::	13365	Qy Db
63 13366	TyrLeuThrAspHisValPheAlaAlaHisLysLeuProProAlaAsp	13425	Qy Db
47 13426	SerSerSerValArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAsp ::::::::::::::::::::::::::::::::::::	28 1348 <b>2</b>	Qy Db
13483		13542	Db

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12102 ACGATGATGCGTTAGCCGGGCGCGCGCGCCAGCGGT-------GAAGCTCAGCG 12055
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                396 uThrThrAspProAlaValLysLysAlaGluSerPheIleGlnAspThrVal-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sLeuAlaLysThrValLysAspMetGlyGlyGluAlaIleThrH1sThrGlyAlaSerLe 450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CACCACCACTGCGAGGTCCGCCCCCGTCCAATCGCGTCCGCCCGATTCCGCCGTCATGGG 1210:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sArgMetAlaGlyLeuProLeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLe 335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GAGGCCCGCCGCCGTCATGGCGCGCGCGCGCGTGGTCACAGGGGCCTCGGC-GCCGACCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        uArgAsnThrValAsnAsnLeuArgGlnArg-----ProAlaArgGluAlaAspIl 467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GCTTGCGCCGGTGGCCATGGTCATGGGCGGGGGGCGTCCTGCACGGGGGTCTCGTCGTCCTT 11995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTGGTCCTTGAGGATCGGCACGCCGATCAGCGACAGCACCGCCGAGATCTCGCCCTGCTT 12277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           yPheAla---GlyValGlyLysLeuGlnGluMetAlaThrLysAsnIleThrAsp-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GGCGGCCAGCTGCTCCTCGACCGCGTCGAGCAGGGCGTTGTCATAGGCCCCAGCGCGGGGG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          uValSerAlaSerSerLeuThrGlnAsnGlyLeuAlaLeuAla-------GlyGl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gProMet 484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            eGluGlu-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      rGlnLeuThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAlaAlaLe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -----LysSerThrAlaSerSerThrThrGlyTyrValAlaAspGlnThrValLy 430
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         42526 bp
Streptomyces coelicolor cosmid 4
AL133423 AL645882
AL133423.2 GI:20520774
ACCETVILTARGEFORCE
                                                                                                                                                                                                      transciptional regulator; walubaculus, fransport permease; l-epimerase; secreted protein; sugar transport ATP binding protein; sugar-transport ATP binding protein; sugar-binding protein; transcriptional
                                                                                                                                                                                                                                                                                                                                                                                acetyltransferase; acyl carrier protein; aldo/keto reductase; aldose 1-epimerase; aminotransferase; beta-ketoacyl synthase; beta-ketoacyl carrier protein synthase III; dehydratase; dehydrogenase; integral membrane protein; lipoprotein; malonyl
                                                                                                                        Streptomyces coelicolor A3(2). Streptomyces coelicolor A3(2)
                                                                                                                                                                                                                                                                                                   CoA:acyl carrier protein malonyltransferase; mark-family transcriptonal regulator; membrane protein; merk-family transcriptional regulator; oxidoreductase; putative aldose
                                                          Actinomycetales; Streptomycineae; Streptomycetaceae;
                                                                                            Bacteria; Firmicutes; Actinobacteria; Actinobacteridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 to 42526)
      Kieser, H.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -----CGCACGGCGGCGGCCAGCAGGGCGGCTT 12397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   --LysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLy 315
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GlyGlyThrAlaAlaSerProSerGluIleProPheAr 482
         Denapaite, D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4A7.
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                                                                 Streptomyces.
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TITLE
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AUTHORS
JOURNAL
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMMENT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 source
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               in codons is given for each CDS.

Usually the highest scoring mailarity to other CDS in the database.

CDS which show significant similarity to other CDS in the database.

The position of possible ribosome binding site sequences are given where these have been used to deduce the initiation codon. Gene prediction is based on positional base preference in codons using a specially developed Hidden Markov Model (Krogh et al., Nucleic Acids Research, 22(22):4768-4778(1994) and the FramePlot program of Bibb et al., Gene 30:157-66(1984) as implemented at http://www.nih.go.jp/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Submitted (09-DEC-1999) Streptomyces coelicolor sequencing project, Sanger Centre, Wellcome Trust Genome Campus, Hinxton, Cambridge CB10 1SA E-mail: barrell@sanger.ac.uk Cosmids supplied by Prof. David A. Hopwood, [3] John Innes Centre, Norwich Research Park, Colney, Norwich, Norfolk NR4 7UH, UK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     jun/cgi-bin/frameplot.pl. CAUTION: We may not have predicted the correct initiation codon. Where possible we choose an initiation codon (atg, gtg, ttg or (att)) which is preceded by an upstream ribosome binding site sequence (optimally 5-13b) before the initiation codon). If this cannot be identified we choose the most upstream initiation codon.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (URL; http://www.sanger.ac.uk/Projects/S_coelicolor/) CDS are numbered using the following system eg SC7B7.01c. SC (S. coelicolor), 7B7 (cosmid name), .01 (first CDS), c (complementary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Colney, Norwich, Norfolk NR4 7UH, UK On May 9, 2002 this sequence version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A set of ordered cosmids and a detailed genetic and physical map for the 8 Mb Streptomyces coelicolor A3(2) chromosome Mol. Microbiol. 21 (1), 77-96 (1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IMPORTANT: This sequence MAY NOT be the entire insert of the sequenced clone. It may be shorter because we only sequence overlapping sections once, or longer, because we arrange for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The more significant matches with motifs in the PROSITE database are also included but some of these may be fortuitous. The length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   strand).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Details of S. coelicolor sequencing at the Sanger Centre are available on the World Wide Web.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Streptomyces coelicolor sequencing at The Sanger Centre is funded by the BBSRC and Beowulf Genomics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Seeger, K.J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Kinashi, H. and Hopwood, D.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (bases 1 to 42526)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         overlap between neighbouring submissions. Cosmid Location/Qualifiers
                                                                                                            Streptomyces glaucescens tetracenomycin C transcriptional repressor TcmR, 226 aa; fasta scores; opt: 594 z-score; 727.4 E(): 0; 46.5% identity in 215 aa overlap. Contains Pfam match to entry PF00440 tetR, Bacterial regulatory proteins, tetR family and a possible helix-turn-helix motif at residues 49. .70 (+3.84 SD)"
                                                                                                                                                                                                                                                                          /gene="SC4A7.02"
/gene="SC4A7.02, probable transcriptional regulator, len:
/note="SC4A7.02, probable transcriptional regulator, len:
/note="SC4A7.02, probable transcriptional regulator, len:
/transl_table=11
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/protein_id="CAB62706.1"
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/note="SC02374"
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                                                                                         /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /db_xref="taxon:100226"
/clone="cosmid 4A7"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /strain="A3(2)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and Harris, D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Parkhill, J., Barrell, B.G. and Rajandream, M.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     coelicolor A3(2)
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length

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CDS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="SC4A7.04"
/gene="SC4A7.04, hypothetical protein, len: 295 aa;
/note="SC4A7.04, hypothetical protein, len: 295 aa;
/similar to TR:09L067 (EMBL:AL163641) Streptomyces
coelicolor hypothetical protein SCC105.18, 298 aa; fasta
scores: opt: 556 Z-score: 591.0 E(): 2.8e-25; 37.415%
                                                                     clavuligerus putative aldo/keto reductase family
Cvml, 344 aa; fasta scores: opt: 916 z-score: 10:
0; 47.7% identity in 331 aa overlap"
                                                                                                                                                                                                                                /gene="SC4A7.05c"
/note="SC02377"
                                                                                                                                                                                                                                                                                            FGLGYGPVHESLPFAAAVLAAVRERGASAPVPIPVPAPRRDPADIAERIRHLGELHQQ
GLVTDEEFSSKKAELLAEL"
complement(3675...4691)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GTGTAN IAWADYTSPSGLGMEAATANRAAHGAVRLNALLRALFGRSPVSLECHSYGSV
GTGTAN IAWADYTSPSGLGMEAATANRAKLDTSARVWAMRDADDWIJQDVPYLEVGG
VGGLAADMLPSRVTDIA YAAGSPGMRAENAARLDTSARVWAMRDADDWIJQDVPYLEVGG
LGHGADPVSAGFGARVLSARDAQGHSGYFVPGTDSLRWFAGIGVGAYRTVACAGEDDT
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/svtameigridgrrledarfaparlarefasitawdrtslater plavgnmgapvo
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sgrvaevfgnldraerysvvvpgvdtelltfqrtdrkryaapvgmakslyaaerraasp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                similar to various hypothetical proteins, e.g. TR:Q9: (EMBL:AL049754) Streptomyces coelicolor hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation="MKVAGTSAPPETAPAASRPGLRELKKQRTRDLLLRSALELFTER
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ALRRALAESWSTIGEAVEQLVPLELHMRFYRVIESTPALLAAHLRRATELEEEIARVV
                                                                                                                                           /note="SC4A7.05c, probable aldo/keto reductase, len: aa; similar to TR:09X5G7 (EMBL:AF124928) Streptomyces
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/note="SC4A7.05c, proba
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ADELRALLTESGRTERYLVAPPEAPLHFKAYDGKASFDGKAVSFRWSWTGASSSAKWKA
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/db_xref="GI:6562777"
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/protein_id="CAB62707.1"
/db_xref="GI:6562776"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            kD protein, SCH10.21c, 329
z-score: 714.7 E(): 2e-32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AVREGLDVDTDPRPRVIVAVFGAVMRVTERIWSARDDASLAALRDLTADYLDQVAPAL
                                                                                                                                                                                                                                                                                                                                                                    GDQSFPVADLGGVEWRSPEMFEGYLRLLPRDADASVAGAAAGAAPAVPQADQDPAAVV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CRAGLSAATAAGRA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="SC4A7.03"
/note="SCO2375"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  regulatory proteins,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /db_xref="GI:6562775"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      codon_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="SC4A7.04"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /db_xref="SPTREMBL:Q9RDQ9"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="SC4A7.03, possible secreted protein,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="Pfam match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="SC4A7.02"
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    putative
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  aldo/keto reductase
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1035.7 E():
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Best Local Similari
                                                    10743
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                                                                                                                                                                                                                                                                                                                                              10572
                                                                                                                                                                                                                                                                                                                                                                                                                                        10512
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10392
AlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAlaPro 147
                                                 GCCGCCCAGGCCGAAGCTGACGGCGGACGCCGCGGTGAGGACCGCGACCAGTGCGGCG 10802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Scores:
                                                                                                   AlaThr----
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/note="SC4A7.06c, possible merR-family transciptional regulator, len: 196 as; similar to SW:TIPA_STRLI (EMBL:S64314) Streptomyces lividans transcriptional activator TipA, 253 as; fasta scores: opt: 187 z-score: 225.2 E(): 3.7e-05; 32.7% identity in 110 aa overlap. Contains Pfam match to entry pF00376 merR, Bacterial regulatory proteins, merR family and a possible helix-turn-helix motif at residues 72. .93 (+3.19 SD)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /protein_id="CAB62709.1"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NDAPYIREAVEASLRRLDLDVIDLYYMHRRDVNVPIEETVAVMADLVREGKVKQLGLS
EVTGDELRAAQTVHPIAAVQSEWSLFSRDIEAGVVPAARELGVTLVPYSPLGRGFLTG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="SC4A7.06c"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note="SC02378"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SFANAEQDLTDGDFRRQQPRFTGDNAAANAALLTPVRALAEAHDATLGQIALAWVQQR
                                                                                                                                          /db_xref="SPTREMBL:Q9RDQ6"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /gene="SC4A7.06c"
                                                                                                                                                                                                                                                                                                ⁄transl_table=11
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US-09-825-414-7 (1-486) x SC4A7 (1-42526)
                                                                       GCCGACGCGGCGGCCACTCGGGCGGAGGCCGCGGAAGCGGTCCCGGGCCGACTCCGAC 10742
                                                                                                                                      GlyGluThrProAlaThrIleAlaAspThrPheAlaLysAlaGluLysLeuAspArgLeu 112
                                                                                                                                                                                                             GAGACGGCCGGCCGCCCGCTCCCGAGGCCGACAAGGCCGACCAAGGCAGCAGCCGAT 10682
                                                                                                                                                                                                                                                                          HisAsnAlaGlnIleThrAlaLeuIleGluThr---ArgAlaSerArgLeuHisPheGlu 92
                                                                                                                                                                                                                                                                                                                                                 CAGGAGGCCCGGAAG-----GCGGCCAACGACGCCGACGCG---GCCGCCGACGACGACG 10622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CGGGCCAAGGCCGATGCCAAGGAGGCCTATGCCCAGGCGTCCGCGTCCGAGGACAATGCG 10571
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GACAAGGCCAAAGCCCTGCGCGACGACGACGCCTGGGACGCCGAGCAGAAGGCGAACGCCGCC 10511
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PheAlaAlaHisLysLeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspVal 73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LeuAlaSerSerValArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIle 45
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ArgValGlnGlnProProValThrAlaThrAspSerPheArgThrAlaSerAspAlaSer 25
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160.50
36.33%
23.90%
6.65%
-ThrThrSerGlyAlaLeuArgAlaThrProPheAlaMet 127
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ------AlaAspTyrLeuThrAspHisVal 53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches:
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Qy     372       Db     11508       Qy     392       Db     11547       Qy     412       Db     11607       Qy     432       Db     11640       Qy     452	Db 11148 Qy 293 Db 11208 Qy 309 Db 11268 Qy 329 Db 11328 Qy 337 Db 11388 Qy 352 Db 11388	Oy 224 Db 11013 Oy 243 Db 11064 Oy 263 Db 11124 Oy 283	Oy 168  Db 10854  Oy 188  Db 10896  Oy 208  Db 10953	, p
aValSerGln   CGAGGAC aAlaLeuThr	GAGGCGCACGCGCAGAACGCCGGAGACGCGGAGACGCGCAGAACGCCGGAGACGCGCAGAACGCCGGAGACGCCCCCC	ArgThrValLeuAlaProAlaL GCGCAGGTAGCCGCACCGGCC- LeuGlyValSerMetAlaGlyG :: GTCACCACCGACTCGCCCGCCG SerValGlnSerArgAspHisG :: GCCGACAGG	ThrLysMetMetAspArgAlaThrGly :::::               GTGGAGTTGGCCGACGACGCC LeuHisAspAlaMetAlaServal :::                   AAGAAGGACGCGACGGCCAAGGCC LeuAspThrG1yValAlaValGlnThr	::::: CATCAAGGCG oLeuThrPro
LeuThrAsnL ThraspProa :::   GCGGAGGAGG SerSerThrT MetGlyGlyG MetGlyGlyG GACAAGGGAAG ArgGlnArgP	LeuGluAlaTyrL	ArgThrValLeuAlaProAlaLeuAlaSerArgProAlaValGln GCGCAGGTAGCCGCACCGGCCAACGACGCCATCCAGCT LeuGlyValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGl :: GTCACCACCGACTCGGCCGGCCGGACTCGCCGTACTGACCGGACAGTC SerValGlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGl :: GCCGAACAGCAGCAGGCCGTCGCT	AlaThrGlyA GCCG AlaSerVall   	:::::: GCGGATGCCATCAAGGCGTCCAAGACCGCCGCGACGGCGGCC LeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGly
BUALAGLYSEGCCCGGGAGCCCGGGAGCCCAAGGA	::: GGCCGCCCA  ysAlaI1	LeuAlaSerArgProAl  CAACGACGC  GIYLeuAlaAlaAsnAl  HIHHHH  GGACTCGCCGTACTGAC  GGInArgGlyGlyAlaLe  HH:::  HH:::  CAGCAGGCCGTCGCT  CGLUGLUASn	yAspLeuH1sTy -GAGCAGCACGAGCGGGTCAC	     ccgcGACGGC  lyAlaLeuSe
uAlaGlySeralaAlaValPheAla 	GGCACAGAGC  ELYSSETALA  ELYSSETALA  CGAAGCCCTC  OLEUASPMET  GGCAGAAGCA  CCGACACCCAG  CGACACCCAG  CGACACCCAG  CCGACACCCAG  CCGACACCCAG  CCACCCCAG  CCACCCCCAG  CCACCCCCCAG  CCACCCCCCAG  CCACCCCCCAG  CCACCCCCAG  CCACCCCCCAG  CCACCCCCAG  CCACCCCCAG  CCACCCCCAG  CCACCCCCAG  CCACCCCCAG  CCACCCCCCAG  CCACCCCCCAG  CCACCCCCAG  CCACCCCCAG  CCACCCCCAG  CCACCCCCAG  CCACCCCCCAG  CCACCCCCCCAG  CCACCCCCCCAC  CCACCCCCCCAC  CCACCCCCCC	aValGin   :::     :::     :::     carccagcTC   carccagcTC               cgacagTcg   cgacagTcg   cuvalLeuGly	rLeuSerAla	GGCC
LysalaalaValSerGlnLeuThrAsnLeuAlaGlySerAlaalaValPheAlaGlyTrp :::       CAGGCCGACGACGAC	GAGGCGCACGCGCAGAACGCGGAGAGAGTCGGCCGCCCAGGCCACAGAGCGTGGCCAACGCG GAGGCGCCACGCCCAACGCCGCAGAACGCGTGGCCAACGCG	ArgThrValLeuAlaProAlaLeuAlaSerArgProAlaValGlnGlyAlaValAsp	ThrLysMetMetAspArgAlaThrGlyAspLeuH1sTyrLeuSerAlaSerProAspArg :::::	
rp 391 11546 sp 411 CG 11606 eu 431 eu 431 aG 11639 rg 451 rg 451 rg 451 rg 451	CG 11207  1y 308  CG 11267  1a 328  1   1327  336  AC 11387  1y 351  1y 351  AC 11447  AA 11507	sp 242 AT 11063 AT 11063 :: 11123 TC 11123 ys 282 11147	rg 187 rg 187 cC 10895 al 207 al 203 al 223 cC 11012	
				<del>,</del>
TITLE JOURNA FEATURES Sou gen	TITLE JOURNAL MEDLINE PUBMED REFERENCE AUTHORS	REFERENCE AUTHORS	RESULT 8 AE012164 LOCUS DEFINITION ACCESSION VERSION KEYWORDS SOURCE ORGANISH	рь 1 Qy рь 1
TITLE II JOURNAL SATURES SOURCE SOURCE Gene CDS	JOURNAL MEDLINE PUBMED DEFERENCE AUTHORS	HORS		11699 CG2 472 Th 11750 CG3
Takita, M.A., Tamu Santos, M., Truffi Kitajima, J.P. Direct Submission Submitted (28-Nov Sao Paulo, Av. Pr Brazil Location 1. 1027 //organis 33913" /strain- //db_xref	Takita, M., Santos, M., Santos, M., Kita) ima, Kita) ima, Kita) ima vikita) im	l (bases la Silva, I buaggio, R II. N.F. IE. N.F. IE. Samargo, L bambergo, L b	AE012164 Xanthomonas campe of 460 of the com AE012164 AE008922 AE012164.1 GI:21  Xanthomonas campe Xanthomonas campe Bacteria; Proteob Xanthomonas.	CGACGTGTT Thralaala 474     CGTGAAGCA 11758
A., Tamura, R.E., Te., Truffi, D., Tsai, S., J.P. ubmission d (28 NOV-2001) Depa o, Av. Prof. Lineu P Location/Qualifiers 1. 10275 /organism="Xanthomo 3913" /db_xref="ATCC:33913 /db_xref="Taxon:190 /note="pathovar: ca 470. 559 /gene="XCC0657"	TruffilD  Truffi	(bases 1 to 10275) Silva,A.C.R., Ferr ggio,R.B., Monteix ,N.F., Alves,L.M.C. argo,L.E.A., Camar ambergo,F., Ciapina sino-Santos,J.R., reira,R.C.C., Ferr ggio,C.C., Gruber, ,R.P., Lemos,E.G., War eira,A.M.B.N., Mar ck,C.F.M., Miyaki, ra,V.K., Oliveira, ra,V.K., Oliveira, ra,V.K., Sena,J.A.D.	is camp the co LEO0892 EGI:2 Camp is camp Proteo	CT <i>I</i>
		. H X X O O O . F B X O O 7	mpl 2 111 111 bac	CGT
,R.E., Te , Tsa1,S )01) Depa . Lineu P . Lineu P . Lalifiers "Xanthomo rcc 33913 ATCC:3391 Laxon:190 novar: ca	TSal, S 159-463 ( 159-463 ( 15	eiro,J.A., eiro,Vitor MM.C. do A MM.C. do A MM.C. L.P. i., El-Dorr eira, M.I.T eira, M.E.T G.M. Lemo klartinez-R klartinez-R klartinez-R klartinez-R	campestris pv. c he complete genom 008922 GI:21111662 campestris pv. c campestris pv. c	\CGTGGTCGACCA
Tamura, R.E., Teixeira, E.C. Truffi, D., Tsai, S.M., Whiti, P. J. P. (28-NOV-2001) Departmento de (28-NOV-2001) Departmento de (28-NOV-2001) Departmento de Av. Prof. Lineu Prestes 748 Cocation/Qualifiers (10275 Corganism="Xanthomonas campes 33913" Ab_xref="ATCC 33913" Ab_xref="ATCC 33913" Ab_xref="taxon:190485" Anote="pathovar: campestris" 170559 170559 170559	TSai,S.M., White Innomes of two Xantl Eficities 159-463 (2002) 159	da Silva,A.C.R., Ferro,J.A., Reinach,I da Silva,A.C.R., Ferro,J.A., Reinach,I Quaggio,R.B., Monteiro-Vitorello,C.B., Jr.,N.F., Alves,L.M.C., do Amaral,A.M. Camaryo,L.E.A., Camarotte,G., Cannavar Chambergo,F., Ciapina,L.P., Cicarelli, Cursino-Santos,J.R., El-Dorry,H., Fari Ferreira,R.C.C., Ferro,M.I.T., Formigi Greggio,C.C., Gruber,A., Katsuyama,A.J. Jr.,R.P., Lemos,E.G.M., Lemos,M.V.F., Madeira,A.M.B.N., Martinez-Rossi,N.M. Madeira,A.M.B.N., Martinez-Rossi,N.M. Menck,C.F.M., Oliveira,W.C., Oliveira,V. Rossi,A., Sena,J.A.D., Silva,C., de Scrossi,A., Sena,J.A.D., Silva,C., de Scrossi,A., Sena,J.A.D., Silva,C., de Scrossi,A.	AE012164 10275 bp DNA Xanthomonas campestris pv. campestris of 460 of the complete genome. AE012164 AE008922 AE012164.1 GI:21111662 Xanthomonas campestris pv. campestris Xanthomonas campestris pv. campestris Bacterla; proteobacterla; gamma subdix Xanthomonas.	\CGTGGTCGACCACATCGAGAA
.R.E., Teixeira.E.C., Tezza, ., Tsai,S.M., White,F.F., Se .) Tsai,S.M., White,F.F., Se .) Tsai,S.M., White,F.F., Se .) Departmento de Bioquimi . Lineu Prestes 748, Sao Pau .alifiers "Xanthomonas campestris pv rCC 33913" .rcx 33913" .caxon:190485" .rovar: campestris"	N.E., Teixeira,E.C., Tezza, Tsai,S.M., White,F.F., Se nnomes of two Xanthomonas pa fficities 159-463 (2002) 159	erro,J.A., Reinach,F.C., Fara eiro-Vitorello,C.B., Van Sluy M.C., do Amaral,A.M., Bertoli marotte,G., Cannavan,F., Card dina,L.P., Cicarelli,R.M.B., C erro,M.I.T., Formighteri,E.F. erro,M.I.T., Formighteri,E.F. erro,A., Katsuyama,A.M., Kishi, G.M., Lemos,M.V.F., Locali,E. Martinez-Rossi,N.M., Martins, ki,C.Y., Moon,D.H., Moreira,L. ra,M.C., Oliveira,V.R., Perei La,M.C., Oliveira,V.R., Perei	10275 bp DNA line estris pv. campestris str. ATCC mplete genome. 2 1111662 estris pv. campestris str. ATCC	\CGTGGTCGACCACATCGAGAAGATCGGC
Takita, M.A., Tamura, R.E., Teixeira, E.C., Tezza, R.I.D., Trindade do Santos, M., Truffi, D., Tsai, S.M., White, F.F., Setubal, J.C. and Kitajima, J.P.  Direct Submission Submitted (28-NOV-2001) Departmento de Bioquimica, Universidade de Sao Paulo, Av. Prof. Lineu Prestes 748, Sao Paulo, Sp 05508-900, Brazil Location/Qualifiers 1. 10275 /organism="Xanthomonas campestris pv. campestris str. ATC 33913" /db_xref="ATCC 33913" /db_xref="ATCC 33913" /db_xref="ATCC 33913" /db_xref="Taxon:190485" /note="pathovar: campestris" 470. 559 470. 559 /gene="xCC0657"	Takita, M.A., Tamura, R.E., Telxelra, E.C., Tezza, R.I.D., Trindade dos Santos, M., Truffi, D., Tsai, S.M., White, F.F., Setubal, J.C. and Kitajima, J.P.  Comparison of the genomes of two Xanthomonas pathogens with differing host specificities  L. Nature 417 (6887), 459-463 (2002)  E. 2022145  E. 2022145  E. 2022147  D. 10275)  S. da Silva, A.C.R., Ferro, J.A., Reinach, F.C., Farah, C.S., Furlan, L.R., Quaggio, R.B., Monteiro-Vitorello, C.B., Van Sluys, M.A., Almeida Jr., N.F., Alves, J.M.C., do Amaral, A.M., Bertolini, M.C.,  Camargo, L.E.A., Camarotte, G., Cannavan, F., Cardozo, J.,  Chambergo, F., Clapina, L.P., Cicarelli, R.M.B., Coutinho, L.L.,  Chambergo, F., Clapina, L.P., Cicarelli, R.M.B., Coutinho, L.C.,  Camargo, L.E.A., Camarotte, G., Cannavan, F., Faraco, M.C.,  Camargo, C.C., Ferro, M.I.T., Formighieri, E.F., Franco, M.C.,  Ferreira, R.C.C., Ferro, M.I.T., Formighieri, E.F., Franco, M.C.,  Greggio, C.C., Gruber, A., Katsuyama, A.M., Kishi, L.T., Leite  Jr., R.P., Lemos, E.G.M., Lemos, M.V.F., Locali, E.C., Machado, M.A.,  Madeira, A.M.B.N., Martinez-Rossi, N.M., Martins, E.C., Machado, M.A.,  Menck, C.F.M., Miyaki, C.Y., Moon, D.H., Morekra, L.M., Novo, M.T.M.,  Okura, V.K., Oliveira, M.C., Oliveira, V.R., Pereira, Jr., H.A.,  Rossi, A., Sena, J.A.D., Silva, C., de Souza, R.F., Spinola, L.A.F.,	E 1 (bases 1 to 10275)  S da Silvay,A.C.R., Ferro,J.A., Reinach,F.C., Farah,C.S., Furlan,L.R., S da Silvay,A.C.R., Ferro,J.A., Reinach,F.C., Farah,C.S., Furlan,L.R., Quaggio,R.B., Monteiro-Vitorello,C.B., Van Sluys,M.A., Almeida Jr.,N.F., Alves,L.M.C., do Amaral,A.M., Bertolini,M.C., Camargo,L.B.A., Camarotte,G., Cannavan,F., Cardozo,J., Chambergo,F., Clapina,L.P., Cicarelli,R.M.B., Coutinho,L.L., Cursino-Santos,J.R., El-Dorry,H., Faria,J.B., Ferreira,A.J.S., Ferreira,R.C.C., Ferro,M.I.T., Formighieri,E.F., Franco,M.C., Greggio,C.C., Gruber,A., Katsuyama,A.M., Kishi,L.T., Leite Jr.,R.P., Lemos,E.G.M., Lemos,M.V.F., Locali,E.C., Machado,M.A., Madeira,A.M.B.N., Martinez-Rossi,N.M., Martins,E.C., Meidanis,J., Menck,C.F.M., Miyaki,C.Y., Moon,D.H., Moreira,L.M., Novo,M.T.M., Okura,V.K., Ollveira,M.C., Ollveira,V.R., Pereira Jr.,H.A., Rossi,A., Sena,J.A.D., Silva,C., de Souza,R.F., Spinola,L.A.F.,	10275 bp stris pv. campestr plete genome.  111662  stris pv. campestr stris pv. campestr stris pv. gamma sub	CTACGTGGTCGACCACATCGAGAAGATCGGCGAACCGGAGGT 11749

gene

CDS

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GTESVADGGDSTÄLGANÄRASYDSSVALGANANSSNYYSVALGTYAVÄTGGSÄTSIGG

QSYAPGNESVALGWQSNASGTRSVSLGSGAYTPADDGVALGAGSIADRDUTYSVGSVG

SERQITNVAAGTEGTDÄVNLDQLNAVAGTAETTARLYAGTGDGTÄFAGQGEDÄTÄAGSN

ATADÄDYSSAPGASSQATAIGÄVALGSGASÄTÄQYANÄSGYNNAASGYGSVSTGAFSQ

ASGDYGVALGGESEASGAQSTÄVGAAÄGASGDGAFÄGGALSVÄEGTESTÄLGYFÄSÄT

GESÄTÄNVGÄESVADGTSAÄÄRGFGAEÄTTSNYSTÄLGGYSTÄSGFNSTÄLGNFSTÄSGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SSVAVGGDATASGAYSI AAGQASVASGYNSVAVGGALLGLLPTEASGDFSTALGGAAW
APGLINSTALGNFAESTGESSVALGADSVADDFAVSVGSAGNERGHTNYAAGTQOTDA
VNLDOLTAVAETAQOTTSESSVALGADSVADTAYAST IEGDNALAAGEGANASSDNSTAVGA
GAQAVAENATAVGMDALASG IGAAALGNNAQALGENSSAVGSNALASDIGATANGAGA
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GATRATASGATALGYESIANGADSTALGVGSVAFGGTSTAVGGASVAFGTDSAAFGAN
AAAGGTASTAIGANSNAFGERTVALGGASNASGDESIALGVSSLASALGTTAVGSNAN
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AVGPESWASGELSTALGYYSTARGANSVALGANSVATRADTVSVGAAGAERQITSVAA
GTEGTDAVNLNQLTAVSDVASATARSFVATGDGAAIAEGVDSVAAGSNAAAFNDYSTA
/product-"protease"
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SDFSSRLIVRYKDGTAAASDRSSKLGVVQSAVGRAAPVTGARAGATAAKATYLRKLGI
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FVAPTYVIQGASYNNVGAALTALDSKVTELDARGGTATATAARTVSLRTAAVPAVAAS
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SRTYEANTYSYGSGNGRGGPATRRIYNVSDGEYATDAVNKGQLDALAADVQTTSGMYQ
TTGEGYARATGDRATAAGAGATASGARSYAVAAGSTASATGASAMGYDSSASGYNSTA
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SSDYSTAVGAASLASGASAVAVGEFSEATGDESVAVGGSTFFGFIPARASGTGAAAFG
GGAWATADYTTAIGWNSYADGVNASALGQSAAALADNALAIGGNSRADAIGASVVGVD
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GAASTALGFASVAWGEGGTAIGTESVAYGDDSTALGANAYAADTGSIAVGTYANAYGP
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DGFAASSYGVGAYAAGAQSSAFGVVSNATGDYSTAVGTQTSASGTSSTAVGGPVDLIP
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                                                                                                                                                                                                   /note="identified by sequence similarity;
located using Blastx/Glimmer/Genemark"
                                                                                                                                                                                                                                                                                                                                                                                                 DSRYSAMADSFETYQGDIEDRLRRQNRRLDRQGAMGSAMLNMSASVAGIASQNRIGAG
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/db_xref="GI:21111664"
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/protein_id="AAM39974.1"
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located using Blastx/Glimmer/Genemark"
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/protein_id="AAM39973.]
                                                                                                                                                                                                                                                          /gene="xcc0659"
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US-09-825-414-7 (1-486) x AE012164 (1-10275) Percent Similarity: Best Local Similarity: CAGCGAATCCAGCGGCCGCCTGTCGTCGGCACTGGGCTACGGCGCAGTGGCGTCCAGCGA 5929 etAlaAlaSerValLysArgHisSer--ATGTCAGCGACGGCGAAGTCGCCACCGATGCGGTCAACAAGGGCCAGCTG---GATGCAT 6579 spargalaThrGlyAspLeuHisTyrLeuSerAlaSerProAspargLeuHisAspAlaM 192 CGGTGTCGGTC---GGTAGCGGCAATGGCCGCGGCGGCCCGGCAACGCGTCGCATCGTCA 6522 hrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetA 172 TGCCACCGGCGCCGATTCGGTGGCATTGGGCTCCGGCTCGCGCACTTACGAAGCCAAC - A etGlnProAlaIleAsnLysGlyAspTrpLeuProAlaPro-----LeuLysProLeuT 152 CAACTCGTTCGTGCGCG----AGAGCGCGGTCAACGGTGTTGCGCTCGGTGCCAATGCCGG CAGCACCGGCGTCGGCCGGCCAGGTCAACGTAATCGGCGAAAACGCGGGTCTCGGTGGGCTA 6349 CCGCGCCGATGCGATTGGTGCAAGCGTGGTCGGCGTGGATGCGTCGGCCACCGGCATCAA 6289 aGlnIleThrAla-LeuIleGluThrArgAlaSer-----ArgLeuHisPheGluGlyG 94 TGCATTGGGCCAGAGCGCCGCCGCATTGGCCGATAACGCGCTGGCGATCGGCGGCAACAG CACGGCCGATTACACCACCGCGATCGGCTGGAATTCCTATGCCGACGGCGTCAACGCCAG 6169 aIleAlaAspTyrLeuThrAspHisValPheAlaAlaHisLysLeuProProAlaAspSe 64 TTTCATCCCGGCACGTGCGTCGGGCACCGGTGCAGCGGCCTTCGGTGGCCGTGCATGGGC 6109 TGAATTCAGCGAAGCCACCGGCGATGAAAGCGTGGCGGTGGGCGGCAGCACGTTCTTCGG 6049 CTACAGCACCGCAGTGGGTGCCCGCGTCGCTGGCCTCCGGCGCCAGCGCGGTGGCCGTGGG 5989 ArgArgValGlnGlnProProValThrAlaThrAspSerPheArgThr-AlaSerAsp--Scores: hrThrThrSerGlyAlaLeuArgAlaThrProPheAlaMetAlaSerLeuLeuGlnTyrM 134 luThrProAlaThrIleAlaAspThrPheAlaLysAlaGluLysLeuAspArgLeuAlaT 114 rAlaAspGlyGlnAlaAlaValAspVal---------ValArgSerValSerSerAspGlnGlnArgGluIleAsn---------AlaSerLeuAlaSerSerSer-----1792 മ GSDLIKLSGTLTAAQVDKVVVELKNDPSVAEVQIDRMLRPVEIKKSVAATDUPPOLVP NDPLYAQYQWHLSNPNGGINAPAAWDLSQGAGVVVAAVLDTGILDEHPDEFAGNLLQGYD FITDAEVSREPTDARVPGALDYKQDWEBADNUVZDGSVAQESSWHGTHYSGTVAEATH GYGMAGYAPKATILPVRVLGRCGGYTSDIADAIVWASGGTVDGVPANTNPAEVINMSL TYYSNYGSKVDLSGPGGGSVDGNPGGYIWQAGYDGATTPTSGSYSYMGIGGTSMASPH GNVSVYVSFEAEPTATDYDAKSTRPGNSETVRFTAPKAGTYYIKLVGAGDYAKLTLVA AVLVEPCDPDTETCAPAAIALTNKAPLTGLSGEYNSSTLYSFEAKAGAVLSFMTYGGT GGGEPCDPATQVAINGAVSRGTTVVVAAGNSGEDAANHSPASCNNTITVGATRITGGI VAGVVALVQSASIGLGDGPLTPAAMEALLKQTSRRFPVTPPTSTPIGSGIVDAKAALE 31.4 156.00 38.77% 25.04% 6.47% 3332 c 3541 g Length: Matches: Gaps: Mismatches: Conservative: Indels: 1610 t 80 247 111 25 ·ProSerLeuAlaA --HisAsnAl 76 205 6465 6229 6406 44 43 30 23

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       submitted (13-OCT-1998) Laboratory of Genetics, University of Misconsin, 445 Henry Mall, Madison, WI 53706, USA
This sequence was determined by the E. coli Genome Project at the University of Wisconsin-Madison (Frederick R. Blattner, director). Supported by NIH grants HG00301 and HG01428 (from the Human Genome Project and NCHGR). The entire sequence was independently determined from E. coli K12 strain MG1655. Predicted open reading frames were determined using GeneMark software, kindly supplied by Mark Borodovsky, Georgia Institute of Technology, Atlanta, GA, 30332 [e-mail: mark@amber.gatech.edu]. Open reading frames that
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Submitted (02-SEP-1997) Guy Plunkett III, Laboratory of Genetics, University of Wisconsin, 445 Henry Mall, Madison, WI 53706, USA. Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
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1 (Dases 1 to 13431)

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Blattner, F.R., Plunkett, G. III, Bloch, C.A., Perna, N.T., Burland, Riley, M., Collado-Vides, J., Glasner, J.D., Rode, C.K., Mayhew, G.F., Gregor, J., Davis, N.W., Kirkpatrick, H.A., Goeden, M.A., Rose, D.J., Mau, B. and Shao, Y.
                                                                                                                                                                                                                                                                                                                Genome Project's World Wide Web site (http://www.genetics.wisc.edu). *** The E. coli K12 sequence and its annotations are periodically updated; this is version M54. No sequence changes. Annotation updates: updated gene identifications and products; all new functional assignments courtesy of Monica Riley; added promoters, protein binding sites, and repeated
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Plunkett, G. III.
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Email: ecoli@genetics.wisc.edu Phone: 608-262-2534 Fax:
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                                                                                                                                                                                                                                             sequences described in reference 1. The unique numeric identifiers beginning with a lowercase 'b' assigned to each gene (protein- or RNA-encoding) are now designated as gene synonyms instead of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Email: ecoli@genetics.wisc. 608-263-7459
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                     /note="IS5"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note="b1370"
comple="b1370"
                                                                                                                                                                                   KTSETNARSSETAAGQSASAAAGSKTAAASSASAASTSAGQASASATAAGKSAESAAS
SASTATTKAGEATEQASAAARSASAAKTSETNAKASETSAESSKTAAASSASSAASSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /translation="MLHAVNTQHGLQRIGPSAIARLGIKRLDDSGHILPWQNLLHAGE
ENLFSGLTALSAEFTIGEGELMAHDVPLGCAPDEYDDLISGTCSHLPKGKTHDVLTGS
DDGRHSNTSLAWGAVQFUNTESVAIDIAYEGPGSGDWRTDGFIVGVGYKF"
complement(1230. . 1256)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         to 66 residues of an approx.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene="b1371"
/function="orf; Unknown"
/function="orf; This 153 aa ORF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MSHQLTFADSEFSTKRRQTRKEIFLSRMEQILPWQNMTAVIEPF YPKAGNGRRPYPLETMLRIHGMQHWYNLSDGAMEDALYEIASKLFARLSLDSALPDR TTIMNFRHLLEQHQLARQLFKTINRWLAEAG WWMTQGTLVDATIIEAPSSTKNKEQQR DEBHÄQTKKGKQWHFGMKAHIGVDAKSGLTHSLVTTAANEHDLNQLGKLLHGEEQFVS DEBHÄQTKKGKQWHFGMKAHIGVDAKSGLTHSLVTTAANEHDLNQLGKLLHGEEQFVS DAGGYQGAPQREELAEVDVDWLIAERPGKVKTLKQNPRKNKTAINIEYMKASIRARVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /gene="trs5_5"
/function="IS, phage, Tn; Transposon-related functions"
/note="f326; 97 pct identical to YI52_ECOLI SW: P03837 but
has 12 fewer N-terminal amino acids"
                                                      NKGDDLRSVFYVDGAAFPVFAFIEDGLSISAPGADLVVNDTTYKFGATNPATECIAAD
                                                                            ADIPDKGCFLNNINAVSKTDFADKRGMRYVRVNAPAGATSGKYYPVVVMRSAGSVSEL
ASRVIITTATRTAGDPMNNCEFNGFVMPGGWTDRGRYAYGMFWQYQNNERAIHSIMMS
                                                                                                                               SSASASKDEATRQASAAKSSATTASTKATEAAGSATAAAQSKSTAESAATRAETAAKR
AEDIASAVALEDASTTKKGIVQLSSATNSTSETLAATPKAVKSAYDNAEKRLQKDQNG
                                                                                                                                                                                                                                      AGQAASSAQSASSSAGTASTKATEASKSAAAAESSKSAAATSAGAAKTSETNASASLQ
SAATSASTATTKASEAATSARDAAASKEAAKSSETNASSSASSAASSATAAGNSAKAA
                                                                                                                                                                                                                                                                                             PDEAGRYSMDVEYGQYSVILLVEGFPPSHAGTITVYEDSQPGTLNDFLGAMTEDDARP
EALRRFELMVEEVARNASAVAQNTAAAKKSASDASTSAREAATHAADAADSARAASTS
                                                                                                                                                                                                                                                                                                                                                                         /product="putative membrane protein"
/protein_id="AAC74454.1"
/db_xref="GI:1787636"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene="b1372"
/function="putative membrane; Not classified"
/note="0.1122; This 1122 aa ORF is 76 pct iden!
/note="0.1122; This 1122 aa ORF is 76 pct iden!
gaps) to 381 residues of an approx. 408 aa pro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /gene="b1372"
1394. .4762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="central position to predicted /bound_moiety="PhoB predicted site" 1394. 4762
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement (1346.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product="orf, hypothetical protein"
/protein_id="AAC74453.1"
/db_xref="GI:1787635"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
/product="IS5 transposase"
/protein_id="AAC74452.1"
/db_xref="GI:1787634"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement(97. .1077)
/gene="trs5_5"
                             VILDFKSGRGFYESHSLIVNDNLSCKKLFATDEIVARGGNQIRMIGGEYGALWRNDGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="factor Sigma70; predicted +1 start at 1427010"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1304.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      HPFRIIKRQFGFVKARYKGLLKNDNQLAMLFTLANLFRVDQMIRQWERSQ"
                                                                                                                                                                                                                                                                                                                                                                                                                                                       /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note≖"factor Sigma70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note=
                                                                                                                                                                                                                                                                                                                                              translation="MNMAVKISGVLKDGTGKPVQNCTIQLKAKRNSTTVVVNTLASEN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           to 381 residues of an approx. 408 aa protein LAMBD SW: P03764"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "b1371"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     factor Sigma70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       factor Sigma70; predicted +1 start at 1426896
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .1363)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  predicted +1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                predicted +1 start at 1426416"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 is 57 p
208 aa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            57 pct identical (0 gaps)
8 aa protein VLOM_LAMBD SW:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               start at 1426438"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          promoter: -115"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         7
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                                                                                                                                                                                                                                                                                                                                                                                                                          Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Pred. No
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Sg

LeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGlnIle

78

promoter

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US-09-825-414-7 (1-486) x AE000234 (1-13431)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Percent Similarity:
Best Local Similarity:
AGCACATCAGCCCGTGAGGCGGCAACCCCATGCGGCTGAT - -
                                                                          GlnArgGluIleAsnAlaIleAlaAspTyrLeuThrAspHisValPheAlaAlaHisLys
                                                                                                                                                                       CGTAACGCGTCCGCGGTGGCACAGAACACGGCAGCCGCGAAGAAGTCAGCCAGTGATGCC 1801
                                                                                                                                                                                                                                                 ArgThrAlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerSerAspGln
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(6342.
/gene="ynaE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /product="putative transposon resolvase"
/protein_id="AAC74456.1"
/db_xref="GI:1797638"
/db_xref="GI:1797638"
/translation="MSRIFAYCRISTLDQTTENQRREIESAGFKIKPQQIIEEHISGS
/translation="MSRIFAYCRISTLDQTTENQREIESAGFKIKPQQIIEEHISGS
AATSERPGFNRLLARLKCGDQLIVTKLDRLGCNAMDIRKTVEQLTETGIRVHCLALGG
IDLTSPTGKMMMQVISAVAEFERDLLLERTHSGIVRARGAGKREGRPPVLNEEQKQVV
FERIKGGVSISALAREFKTSRQTILRAKAKLQTPDI"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPLEMENT.

/gene="bi374"
/function="IS, phage, Tn; Not classified"
/function="IS, phage, Tn; Not classified"
/note="f196; This 196 aa ORF is 76 pct identical (0 gaps)
+o 193 residues of an approx. 200 aa protein TNPO_ECOLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /prodein_id="AaC74455.1"
/protein_id="AaC74455.1"
/protein_id="AaC74455.1"
/db_xref=="Gi:1787637"
/translation="MAFRMSEQPRTIKIYNLLAGTNEFIGEGDAYIPPHTGLPANSTD
/translation="MAFRMSEQPRTIKIYNLLAGTNEFIGEGDAYIPPHTGLPANSTD
/translation="MAFRMSEQPRTIKIYNLAGTNASGNALFISELGPLPENVTWLSP
/translation="MAFRMSEQPRTIKIYNLAGTNASGNALFISELGPLPENVTWLSP
/translation="MAFRMSEQPRTIKIYNLAGTNASGNALFISELGPLPENVTWLSP
// CARREST CONTROL OF CON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        to 191 residues
SW: P03740"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PSDTYPSGYALMQGQAFDKSAYPKLAAAYPSGVIPDMRGWTIKGKPASGRAVLSQEQD
GIKSHTHSASASSTDLGTKTISSFDYGTKSTINGAHTHSVSGSTNSAGAHTHSLANV
NTASANSGAGASTRLSVYUHKQNYATGSAGAHTHSLSGTAASAGAHAHTVGIGAHTHS
VAIGSHGHTITVNAAGNAENTVKNIAFNYIVRLA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(6342. .6608)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement(6033. .6061)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(5435. .6025)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /gene="b1374"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GVEFDGSKDITLTAAHVAAFARRATDTYADADGGVPWNAESGAYNVTRSGDSYILVNF
YTGVGSCRTLQMKAHYRNGGLFYRSSRDGYGFEEDWAEVYTSKNLPPESYPVGAPIPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /function="orf; Unknown"
/note="o191; This 191 aa
to 191 residues of an ap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   P07806"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /gene="ynaC"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /gene-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       'note="f88;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              function="orf; Unknown"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="b1375"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /gene-"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /note="factor Sigma70;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            codon_start=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          'note="b1373"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     47.2
155.50
35.49%
23.73%
6.45%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      e="f88; This
residues of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ynaE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      88 aa ORF is 32 pct identical (4 an approx. 1112 aa protein SYV_YE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative: Mismatches: Indels:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  an approx.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .6608)
                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length:
Matches:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           an approx.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       aa ORF is 94 pct identical (0 gaps) approx. 200 aa protein Y194_LAMBD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                predicted +1 start at 1431699"
                                                                                                                                                                                                                                                                                                                                                                                                                    13431
121
60
220
109
21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       aa protein SYV_YEAST S
-GCTGCGGACTCA 1852
                                                                                   58
                                                                                                                                                                                                                                                          38
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CDS gen

Qy 405 AlaGluSerPhe	Qy 385 AlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThrThrAspProAlaValLysLys	Qy 365 AsnIleThrAspProAlaThrLysAlaAlaValSerGlnLeuThrAsnLeuAlaGlySer	2651	Oy 345 GlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeuGlnGluMetAlaThrLys	\( \text{Y} \) ALBTINTASPALAMETGLYALAVBLARGSETLEUTHTGLINASN \\ \( \text{Y} \) ALBTINTASPALAMETGLYALAVBLARGSETLEUTHTGLINASN \\ \( \text{II} \) \\ \( \text{III} \) \\ \( \text{II} \) \\ \( \text{III} \) \\ \( \text{IIII} \) \\ \( \text{IIII} \) \\ \( \text{IIII} \) \\ \( \text{IIII} \) \\ \( \text{IIIII} \) \\ \( \text{IIII} \) \\ \( \text{IIII} \) \\ \( IIII	2543	Db 2489 AACGCGAAAGCGTCGGAAACAAGCGCAGAATCCTC	Db 2450 GCAGCGAGGTCT	Qy 265 GlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLysGluPro	QY 243 VALSETMECATECTYGLYLEUNATANTASTALTGLYPNEGLYASTATGLEULEUSETVAL	2330	Db 2270 AGCGCCTCGGCTGCGGCAGGCTCAAAAACAGCGGCTGCCGTCGTCTGCCAGTGCCAGCGTCA  Qy 225 ThrValLeuAlaProAlaLeuAlaSerArgProAlaValGlnGlyAlaValAspLeuGly	207	Qy 196 ValLysArgHisSerProSerLeuAlaArgGln	Qy 178 LeuHisTyrLeuSerAlaSerProAspArgLeuHisAspAlaMetAlaAlaSer 	Qy 158 AlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAspArgAlaThrGlyAs	Qy 138 IleAsnLysGlyAspTrpLeuProAlaProLeuLysProLeuThrProLeuIleSerGly b 2063 GCATCCACCGCG	Qy 118 GlyAlaLeuArgAlaThrProPheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAla	Qy 99 IleAlaAspThrPheAlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSer	Oy 79 ThrAlaLeuIleGluThrArgAlaSerArgLeuHisPheGluGlyGluThrProAlaThr	DD 1833 GCACGCGCAGCCAGCACGTCAGCCGGGACAGGCCGCGTCGTCGGCTCAGTCAG
-ThrValLys 414   gene	rAspProAlaValLysLys 404 	uThrAsnLeuAlaGlySer 384              TACGGCGGAATCC 2710	2671 CDS	uGlnGluMetAlaThrLys 364 gene	- AGCGCCACGACGACGAAG 2650	2596 FEATURES sour		2488 304	yLeuLysAspLysGluPro 284 JOURNAL REFERENCE	YASNATGLEULEUSETVAL 254         CACTGAACAGGCCAGCGCA 2449 TITLE		2329	224 SOURCE ORGANIS	2269	aMetAlaAlaSer 195 RESULT 10 	lyAsp 177 ::: GAA 2149	157 Ay Db 2	137 Db 2	117 Db 2	98 Db 2	GGCTCAGTCAGCGTCTTCC 1912 Ov 415
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CDS

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gene
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                                .7158)
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codon\_start=1/

by Glimmer2; .12096)

putative"

ual protein"

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PID:2398717; identified by sequence similarity; putative"
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                                 9714
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                                                                                                                                                                                                                                                                                                                                                                                                                                                9450 ACCGGTCCCCCCCCAAGTCTCCCCCCCGCCC----- 9488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9654 GCCGGCCGCGCGACGGTGGCGTTCGCGCCGTTGCCGCCGTTGCCGCC 9713
                                                                                                                                                                                                                                                                                                                                                                                       9489 GCCGGCCCGCCCGCCCAGCCCCGCCGTTCTGGCCGCTCGTGCCGGATTCGCCCGC 9548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     9237 CCCTTTGCCGCCGGACCCCGACACCCTGGATTCCGTTCTGGCCAAAGAGGTTCCCCGC 9296
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  125
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                                                                                                                                                                                                                                205 ArgGlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaValArg 224
                                                                                                                                                                                                                                                                                               185 ProAspArgLeuHisAspAlaMetAlaAlaSerValLySArgHisSerProSerLeuAla 204
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              89 LeuHisPheGluGlyGluThrProAlaThrIleAlaAspThrPheAlaLysAlaGluLys 108
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       36 SerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrLeuThrAspHisValPheAla 55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20 ThrAlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSer------
                                                                                                                                                                         ThrValLeuAlaProAlaLeuAlaSerArgProAlaValGlnGly------
                                                                                                                                                                                                                                                                                                                                               GlnValGlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSerAlaSer 184
LeuValLeuGlyLeuLysAspLysGluProLysAlaGlnLeuSerGluGluAsnAspTrp 294
                                                                                                                                                                                                                                                                                                                              GGTGGTGGG------9569
                                                                                                                                                                                                                                                                                                                                                                                                                   ProAlaProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAsp 164
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AlaHisLysLeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsn 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ACCGCCCTGCCCGCCGCGCCCGGGGGTTACCGCCGTTACCGCCGTGACCGCCGTTACCATC
                              GCTGGTCGGGGTGGCGCGCGAGCACCGTCTGCACCCGCGGTGGATCC---GGCGCCGCC
                                                       AlaGlyPheGlyAsnArgLeuLeuSerValGlnSerArgAspHisGlnArgGlyGlyAla 274
                                                                                                                                                 ------GGCCCCGCCATTACCAACAAGCCCGCCGTTGCCGCCCTTGCCGCTGGCCCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeu 144
                                                                                                                     ------AlaValAspLeuGlyValSer-----MetAlaGlyGlyLeuAlaAlaAsn 254
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155.50
34.23%
23.65%
6.45%
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Matches:
Conservative:
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Indels:
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OURNAL EDLINE ERENCE	TTLE		RENCE		CE CE	ORDS	DEFINITION ACCESSION	TT 11 75	10362	463	10302	448	10266	428	10206	409	46	394	10086	375	355	10011	335	9951	315	91	308	9831	295	9771
ti teaton on	Saito, N., Sampei, G., Seki, Y., Sivasundaram, S., Takeda, J., Takemoto, K., Takeuchi, Y., Wada, C., Y. and Horluchi, T.  10	ai.H., Kashimoto,K., Kimura,S., Kitakawa,M., Makino,K., Miki,T., Mizobuchi,K., Mori,H., M Nakade,S., Nakamura,Y., Nashimoto,H., Nishio	ita,K., Havashi,K., Inada,T., Isono,K.,	e:Kohara clone #264. Coli oteobacteria: gamma subdivision: Enterobacteriaceae:	ydbī; yzzī. Escherichia coli (strain:K12) DNA, clone lib:Kohara lambda minise		E.coli genomic DNA, Kohara clone #264(30.7-31.1 min.). D90775 AB001340	D90775 16902 hp DNA 1	GGGCTGGCCCGGCCGCGTGGGCACCGATCGTGGAGCCGGCTCCGCCGGTGCCTCC 10421	gGluAlaAs	TITGCCGCCCGATGAGAAGTGGGCGCCGTTGCCGCCGGCCCGCCGCTTGCCGCCGCTGGT 10361	lAsnAsnLeuArgGlnArgProAl	CCGCCGGCCCGCC	lalleThrHisThr	aggcggggaccgggggccccgtTgccccccggcacctccgcccccaTTgccgaccag 10265		GGTCGCCGCCAGA 10	aalareuThrThraspTroalaValI.vsI.vsalaGluserDhe 408	GTTGCCGCCCTTACCGCCGGCGCCGCCAGCACCGCCGTCGCCTGGGTGGG		ValGlyLysLeuGlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAlaAla 374	:::	uValSerAlaSerSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaG	AAGCGCCTTACCGCCTTGCCCACCGGCTCCACCGCCACCGCCGCCTCCACCGTTGCCGGC 10010	ysArgMetAlaGlyLeuPro		3lyAlaAlaLeuAsnAlaGly 314	:::     :::     :::   ::	LeuGluAlaTyrLysAlaIleLysSerAlaSerTyrSer 307	 

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REFERENCE
AUTHORS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CDS
                                                            CDS
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Takayama, Ikoma, Nara 630-01, Japan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Members: (1995.4 - 1996.3)
Aiba,H., Baba,T., Fujita,K.,
Horiuchi,T., Ikemoto,K., Inac
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Collaboration Information:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (E-mail:hmori@gtc.aist-nara.ac.jp, Tel:81-7437-2-5660,
Fax:81-7437-2-5669)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Direct Submission
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Information operator:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Headed by:
Name: Takashi Horiuchi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kimura,S., Kitagawa,M., Kitakawa,M., Makino,K., Masuda,S., Miki,T., Mizobuchi,K., Mori,H., Motomura,K., Nakamura,Y., Nashimoto,H., Nishio,Y., Oshima,T., Saito, Sampei,G., Seki,Y., Tagami,H., Takemoto,K., Wada,C., Yamamoto,Y. and Yano,M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     E-mail: hmori@gtc.aist-nara.ac.jp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       E-mail:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The Japan E.coli genome DNA sequencing group
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The Japan E.coli genome DNA sequencing project
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The Japan E.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Name: Hirotada Mori
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (bases 1 to 16902)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                kishori@nibb.ac.jp
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QTAFAMRMLPAQMTDIVVGLSTGQSPFMVLMQQGGHSAMQETRIASLPVTAIPAGMKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NARA Institute of Science and Technology, Ikoma, 630-01, Japan
                                                                                    PCVTAGSA"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /db_xref="taxon:562"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              coli genome database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Institute of Basic Biology, Okazaki, 444, Japan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Hayashi, K., Honjo, A.,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       similar to [SwissProt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   3408.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /translation="MLLSMKQITQLIEVMLVGRGGDQAVGQATLGIDTNVGLHAKVPL
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /protein_id="BAA14971.1"
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LDFKSGRGFYESHSLIVNDNLSCKKLFATDEIVARGGNQIRMIGGEYGALWRNDGAKT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /transl_table=11
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transl_table=11
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       translation="MRNRWFSVMVGPSVRVNEWFSAYAMAGMAYSRVSTFSGDYLRVT"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  codon_start=1
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                                                                                                                                                                                                                                                                                                                       3921
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3810 AGCACATCAGCCCGTGAGGCGGCAACCCATGCGGCTGAT-----GCTGCGGACTCA 3860
                                                                                                                                                                                                                                                                                                                                                                                                 79 ThrAlaLeuIleGluThrArgAlaSerArgLeuHisPheGluGlyGluThrProAlaThr 98
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   19
                                                                                                                                                                                                                                      GAAGCATCAAAAAGTGCTGCCGCTGCAGAGTCCTCAAAAAGCGGCGGCGGCCACCAGTGCC 4010
                                                                                                                                                                                                                                                                 IleAlaAsp---ThrPheAlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSer 117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GCTGCGACCTCGGCCCGGGATGCGGCGGCCTCAAAAGAAGCGGCAAAATCATCA---GAA 4157
                                   AlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAspArgAlaThrGlyAsp 177
                                                                                                                                                                                               GlyAlaLeuArgAlaThrProPheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAla 137
                                                                                                                                                                                                                                                                                                                       AGCGCA-----
                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGlnIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CGTAACGCGTCCGCGGTGGCACAGAACACGGCAGCCGCGAAGAAGTCAGCCAGTGATGCC
                                                                                                                 IleAsnLysGlyAspTrpLeuProAlaProLeuLysProLeuThrProLeuIleSerGly 157
                                                                                                                                                          GGTGCGGCGAAAACGTCAGAAACGAATGCTTCAGCGTCACTACAATCAGCAGCCACATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GlnArgGluIleAsnAlaIleAlaAspTyrLeuThrAspHisValPheAlaAlaHisLys 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GVGSCRTLOMKAHYRNGGLFYRSSRDGYGFEEDWAEVYTSKNLPPESYPVGAPIPWPS
DTVPSGYALMGCQFDKSAYFKLAAA. 1950/I DDWRGWTIKGKASGRAYLSQEDDGI
KSHTHSAASASSTDLGTKTTSSEDYGTKSTNNTGAHTHSVSGSTNSAGAHTHSLANVIT
ASANSGAGSASTRLSVVHNQNYATSSACAHTHSLSGTAASAGAHAHTVGIGAHTHSVA
IGSHGHTITVNAAGNAENTVKNIAFNYIVRLA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /note="ORF_ID:0264#1
similar to [PIR Accession
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /protein_id="BAA14977.1"
/db_xref="G1:1742245"
/tanslation="ADEFGVAASVSDVLLVALLSCTIPFFVVLASSSATADAISSA
RLAAVSARVAADSAVLLL"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                complement(4694...>4882)
/note="ORF_ID:0263#26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               similar to [SwissProt Accession Number P03774]"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             start codon is not identified yet"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 similar to [SwissProt Accession Number P03774]
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/transl_table=11
/protein_id="BAA14976.1"
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/note="ORF_ID:o263#25
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/product="Tail fiber assembly protein G"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                translation="MAADCSDAEAFVSDVFAAPALVAAALFEDSAAAALFDASVAFVD/
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155.50
35.49%
23.73%
6.45%
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Matches:
Conservative:
Mismatches:
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                                                                            ACCACGAAGGCATCAGAA 4100
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	SULT 12	RES
AAATATTACCCTGTTGTTATGCGTTCT 5078	5049	DЪ
SerGluIleProPheArgProMetArgSer 486	477	Qy
GCTGATAAGCGTGGTATGCGTTATGTGCGGGTTTAACGCTCCTGCAGGTGCAACATCTGGA 5048	4989	DЬ
GlnArgProAlaArgGluAlaAspIleGluGluGlyGlyThrAlaAlaSerPro 476	459	Qy
ATACCCGATAAGGGATGCTTCCTGAACAACATTAACGCCGGTCAGTAAAACAGACTTT 4988	4932	ДЬ
IleThrHisThrGlyAlaSerLeuArgAsnThrValAsnAsnLeuArg 458	443	Qy
GTAAAATCAGCCTATGACAATGCAGAGAAACGTCTGCAGAAAGACCAGAACGGCGCTGAT 4931	4872	Дb
AlaLySThrValLysAspMetGlyGluAla 442	432	Оу
GTACAGCTCAGCAGTGCGACCAACAGTACGTCTGAAACGCTGGCGGCAAACGCCAAAGGCA 4871	4812	Дb
SerThrAlaSerSerThrThrGlyTyrValAlaAspGlnThrValLysLeu 431	415	Qy
GCAGAGGATATTGCATCCGCCGTGGCGCTTGAGGATGCAAGTACGACGAAAAAAGGGGATA 4811	4752	ДD
AlaGluSerPhe 414	405	Ωу
GCGGCAACGCGCGCCGAGACAGCAGCTAAACGG 4751	4719	дь
AlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThrThrAspProAlaValLysLys 404	385	Qy
	4680	αd
AsnIleThrAspProAlaThrLysAlaAlaValSerGlnLeuThrAsnLeuAlaGlySer 384	365	Qy
GCGACAGAGGCTGCTGGCAGT 4679	4659	οь
GlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeuGlnGluMetAlaThrLys 364	345	Qy
GCGACCAGACAAGCGTCAGCAGAGAGAGCAGCGCCACGACGGCATCCACGAAG 4658	4605	фd
AlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsn 344	325	Qy
TCAGCCAGTTCGGCGCCGTCATCGGCATCATCGGCGTCTGCTTCAAAAGATGAG 4604	4551	Db
SerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAspMet 324	305	Qy
AACGCGAAAGCGTCGGAAACAAGCGCAGAATCCTCAAAAACGGCTGCCGCATCG 4550	4497	ДD
LysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLysSerAla 304	285	Qy
GCAGCGAGGTCT	4458	DЬ
GlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLysGluPro 284	265	Qy
GCATCGTCTGCTTCAACAGCCACAACGAAGGCTGGCGAAGCCACTGAACAGGCCAGCGCA 4457	4398	DЪ
rMetAlaGlyGlyLeuAlaAlaAsn	245	Qy
ACAAGTGCCGGGCAGGCCTCAGCCAGTGCCACCGCCGCGGAAAATCGGCAGAAAGCGCC 4397	4338	Db
ValLeuAlaProAlaLeuAlaSerArgProAlaValGlnGlyAlaVal	225	Qy
AGCGCCTCGGCTGCGGCAGGCTCAAAAAACAGCGGCTGCGTCTGCCAGTGCAGCGTCA 4337	4278	Db
ValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaValArg 224	207	Qy
GCGAAGGCGGCAAAAACGTCCGAGACGAACGCCAGGTCTTCTGAAACGGCAGCGGGACAG 4277	4218	Db
ValLysValLysArgHisSerProSerLeuAlaArgGln 206	196	Qy
GAAAT	4158	ДD
LeuHisTyrLeuSerAlaSerProAspArgLeuHisAspAlaMetAlaAlaSer 195	178	Qy

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MEDLINE
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                                               FEATURES
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                          source
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A 570-kb DNA sequence of the Escherichia coli K-12 genome corresponding to the 28.0-40.1 min region on the linkage map DNA Res. 3 (6), 363-377 (1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and Technology, Res. & Edu. Center i
Takayama, Ikoma, Nara 630-01, Japan
(E-mail:hmori@tc.aist-nara.ac.jp, 7
Fax:81-7437-2-5669)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Alba H., Baba, T., Fujita, K., Hayashi, K., Honjo, A., Horiuchi, T., Ikemoto, K., Inada, T., Isono, K., Isono, S., Itoh, T., Kanai, K., Kasai, H., Kashinoto, K., Kin, S., Kimura, S., Kitagawa, M., Kitakawa, M., Makino, K., Masuda, S., Miki, T., Mizobuchi, K., Mori, H., Kitakawa, K., Nakamura, Y., Nashinoto, H., Nishio, Y., Oshima, T., Saito, N., Sampei, G., Seki, Y., Tagami, H., Takemoto, K., Wada, C., Yamamoto, Y., and Yano, M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The Japan E.coli genome DNA sequencing group Members: (1995.4 - 1996.3)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mori, H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    The systematic sequencing of the Escherichia coli genome in Japan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Aiba,H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Escherichia col
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Escherichia coli (strain:K12) DNA,
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                                                                                                                                                                                                                                                                                                                                                                          Kimura,S., Kitagawa,M., Kitakawa,M., Makino,K., Motomura,K., Masuda,S., Miki,T., Mizobuchi,K., Mori,H., Motomura,K., Nakamura,Y., Nashimoto,H., Nishio,Y., Oshima,T., Saito,N., Sampei,G., Seki,Y., Tagami,H., Takemoto,K., Wada,C., Yamamoto,Y. and Yano,M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ischerichia.
                                                                                                                                                                                                                                                      Information operator:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Aiba, H., Baba, T., Fujita, K., Hayashi, K., Honjo, A., Horiuchi, T., Ikemoto, K., Inada, T., Isono, K., Isono Itoh, T., Kanai, K., Kasai, H., Kashimoto, K., Kim, S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     .ibrary clone:Kohara clone #263.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The Japan E.coli genome DNA sequencing project
                                                                                                    The Japan
                                                                                                                                                                         Address: NARA Institute of Science Ikoma, 630-01, Japan
                                                                                                                                                                                                                                                                                E-mail: kishori@nibb.ac.jp
                                                                                                                                                                                                                                                                                                           Address: National
                                                                                                                                                                                                                                                                                                                                   Name: Takashi Horiuchi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (sites)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (bases 1 to 18700)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (sites)
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                                                                                                                                                                                                                                 Hirotada Mori
                                                                                                                                                 hmori@gtc.aist-nara.ac.jp
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/organism="Escherichia coli"
                                             3.aist-nara.ac.jp.
Location/Qualifiers
                                                                                                 E. coli genome database
                                                                                                                                                                                                                                                                                                     Institute of Basic Biology, Okazaki,
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TPALYLMRKNAPVDTTKTKTLDLGTAFHCRVLEPEEFSNRFIVAPEFNRRTNAGKEEE
KAFLMECASTGKTVITAEEGRKIELMYQSVMALPLGQWLVESAGHAESSIYWEDPETG
ILCRCRPDKIIPEFHWIMDVKTTADIQRFKTAYYDYRVHVQDAFYSDGYEAQFGVQPT
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MDLDI YNLHPAHAKRIEÐI TAENKPPFSVFROKFITWEGGLDYSRAITVASVKBAPIG
IEVLPAHVESVLNYKUTETDHANDPDEI VDI ACGRSSAPHOGRVTÐSKGKDDDEKKPO
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VQQBEÐI ACNAGGGTGGDNCPDCGAVMGDATYGGTFÐEGSQVÆAKBNDÞÐEMBGAÐEH
HNENAGSDÞHRDCSDÆTGEVAÐPVIVEÐI EPGI YYGI SNENYHAGPGI SKSQLDÐI AD
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PAVTALAVSHKTSLLDPLEIRELHKLVRDTDKVFPNPGNSNLGLITAFFEAYLNADYT
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/note="Nucleotide position 1416913-1435612 from the
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/gene="racc"
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                                                                                                                                                                                                                                 complement(3750.
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Best Local Similarity:
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                                                   CGTAACGCGTCCGCGGGCACAGAACACGGCAGCCGCGAAGAAGTCAGCCAGTGATGCC
                       GlnArgGluIleAsnAlaIleAlaAspTyrLeuThrAspHisValPheAlaAlaHisLys
                                                                           ArgThrAlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerSerAspGln
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                                                                                                                                                                                                                                                               /translation="mkniatgdvlerirrlapshytapfktvaewrewqlsegqkrce
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similar to [SwissProt Accession
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KTGNLIITSPCRNPVMKKLERKGIIQHQSDSANCSYYLVTEKYSHFMKLFWNSRSRRF
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                                                                                                                                                                                                                                            MDRMTMNGGRWVNFNWESWRPNVVQPGIAK
9251. .9556
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15504 GAAGCATCAAAAAGTGCTGCCGCTGCAGAGTCCTCAAAAAGCGCGGCGGCCACCAGTGCC
                                                385 AlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThrThrAspProAlaValLysLys 404
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AGAGSVPEALTGEFDALNGLGATPRDGALRQVVLAAGGTLASSFTTVAGGLAGLRDEV
TGLAGQTAVEASQTLRQLAELNGRMTGAQQSALNPLLDERDRLLGELSRTVGVQNASFD
ALGRTTVTLGSAPGGFDLLLEGTAASTLGVAEAGGLVLEVTRAGATLQSRQITGGSSLQG
YASALSAVDNAAAELDALARQLVAEMNTVHAQGIDQSGARGGDLFALEGWQVAADAGN
RTGGGASVVAFDTATAPGPLTLLHDAAAGLMHAYDAGGTLLGSGAETLALTGLTLQNT
                                  GAAMDGDRLTVSPRQGRALDMRFLLTDTRQIAAAAPYIVSAASGNAGSAQASFVPVTS
                                                                                                                                                                          /product="flagellar hook-associated protein
/protein_id="AAG31286.1"
/db_xref="GI:11136619"
\mathtt{AAGATTLSFSIGGTVHSFDLSALGATDPATLAAALNAGAVSTGGQTLAELGVTASGST}
                  TLPATGSLGGLLTDAGGADAATLIRAGVVGHIPAGTGSVTLASLGSQSQQEFLLSDPA
                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
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                                                                                                                                                          translation="MSILDIARSGLLSYRSALSVTAENIANVNTEGYVRREAVLAQVP/
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Alignment
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                                                                                                                                                                                                                                                                                                                                                                       2016
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Match
                  GCACCAACCT - - - CTCGCCCGTGCGCATCAGCGGCGCGCGTGGCGGGGGGGGCGCATGGATG
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US-09-825-414-7 (1-486)
gHisSerProSerLeuAlaArg-GlnVal----
                                                                                                                          LysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeuArgAlaThrPro 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CGGCTTTCGCGGAACCGGGATCGCGGGCGATCCTGCCGGGCGAGCGTGTGCTCGCT
                                                                                       CCCGCACCGGCGTCACGATCGAGGCGCCCCGCCGACGGCACGCTCACGTTCGCGCTCACCG
                                                                                                                                                                                                                 GCAGGCCAT-CAACGCGTTCGGGGCCGGGATCGAGGC-
                                                                                                                                                                                                                                                                                                                                               TCCCCTCCCGGTGCAG-
                                                                                                                                                                                                                                                                                                                                                                                                      uProAlaProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ----TCTGCCTCCTGCATCCGCGCTCCCGAGCCTGACGCTCGAAGCGGCCGGGGGCCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGly-AspTrpLe 144
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TCATCCCGCCGA-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ArgAlaSerArgLeuHisPheGluGlyGluThrProAlaThrIleAlaAspThrPheAla 104
                                                                                                                                                                                                                                                                        pGlnValGlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSerAlaSe
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VQDGGADIGIVGLRHTAGAAVTLQGTDAEGSPAGAPLTLLSGTASDSAFFGELRLSSAS
GFSADLGGVRQDAAVDBWGGLVSRGVSGAGVQTYGFTYDPAFDGAGLSADGTFAGA
GSAQYAMTVGNRTVTLDAAAAGVSDGAGVASALAALLRAEAPAATLTGGPVAALPADG
SSAQYAMTVGNRTVTLDAAAAGVSDGAGVASALAALLRAEAPAATLTGGPVAALPADG
RSVSVSYEGQSYTLRWTGGAVAVDGGEPGLLTAAFDATRIRLVJQAAGSLDGAGLRIES
GAAAAFGLAAADAPVSTITGQPADPAALPASFDIELGGTIYSLTASAGGIAVPAGFPG
SAGWDGAGRLVLEVPAAAGALRVPPQAGARAAGLATEGYSVAVSQGALVLTSTTGAPV
AASAEAQALAGQRLTLTDLPDEDLIVMTGTGTTLAGSLDEAPPPTPAAVELRVTD
AASAEAQALAGGRLTLTDLPDEDLIVMTGTGTGTTLAGSLDEAPPPTPAAVELRVTD
AASAEAQALAGGRLTLTDLPDEDLIVMTGTGTGTLAGSLDEAPPPTPAAVELRVTD
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RAVQLSAAKEMEATLGRYGANASSAADRLAHADVALGEVAARMRELKDVVLQAGNPTL
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SDEGRAGLRIVAESAREALFALANRKDAMGQGLFAGYAAGPAFVKEGDTVRFAGNDGQ
PVAQLSETLRVATSLGGAEVFMAVPTEAGPRSVFELADDLVATLSVPLAHSSPQRTAE
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GEILDRLYALASGDPATGQGGYGADYMQLQTRIGTQAKAAAGRVSSTAAALEVAERAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MAEQRARAGALAASVDTQADAIRTRQTRIATAIGGLEDLDVAEAVTRLQQLLLTQEAA
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/note="HAP 3"
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151.50
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                             -LeuAspT
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472 hralaAlaSer 475	Qy       420 hrThrGlyTyrValAla       427	Db 2735 CGCAGGCGGTTCCGCGCAGGTATGCGATGACGGTGGGCAACCGGACGGTGACACTCGATG 2794  Qy 370 laThrLysAlaAlaValserGlnLeuThrAsnLeuAlaGlySer	Oy 307 erGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAspMetAlaThrA 327	Qy 210 hrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaValArgThrValLeuAlaP 229 :::       Db 2312 CGCTGGCGCTGCGCGTCATGCGGGTGAACCGGGCCACCGGGCCACCGGGCCGACCTGTCGC 2371 Qy 229 roAlaLeuAlaSerArgProAlaValGlnGlyAlaValAspLeuGlyValSerMetA 248
gene	/codon_start=1 /codon_start=1 /codon_start=1 /evidence=not_experimental //evidence=not_experimental //evidence=not_experimental //product="proBable macroulde-efflux transmembrane protein" /protein_id="cad17461.1" /protein_id="cad17461.1" /protein_id="cad17461.1" /protein_id="cad17461.1" /protein_id="manprkmrdraaalLrnasTTHepanpcwipDaaaaGlhpGpr /translation="manprkmrdraaalLrnasTTHepanpcwipDaaaaGlhpGpr /translation="manprkmrdraaalLrnasTTHepanpcwipDaaaaGlhpGpr WRARFWAIFGGAALSLIGSALTUFUGAPLGTALHAYVMMAIRSAAQAFQAPA AAASVTMLVPGGFLVRAAGLNQSLQSTIFVYAAPLGATGWAIGTGWAIRSAAGAFQAPA AAASVTMLVPGGFLVRAAGLNQSLQSTIFVYAAPLGATGWAIGTGWAITCGFAMSCVA LALTALAPGSLFGVAVAWWVISGTTFVFGNAAPRRQVAWILDRRPSRSEARTD LAAPVGLALFTPLGEVIGVRALFAIAGLLGAAASLAGFLSPSLMRLDRRPSRSEARTD "aapvGLALFTPLGEVIGVRALFAIAGLLGAAASLAGFLSPSLMRLDRRPSRSEARTD "a	/organism="Relitonia solanacearum" /strain="GMI1000" /db_xref="taxon:305" /plasmid="megaplasmid" complement(1471499) gene="RSP0310" /note="RSP0310" /note="RSP0310" /function="cell processes; transport of small molecules" /note= name confidence: hypothetical predicted by Codon_usage predicted by FrameD"  predicted by FrameD"	Cremieux, Moleculais BP27, 313 BP27, 313 Dausset-Cl IR Route URGV, 2 rr Laboratois F31326 Cas INRA, BP2 Christian http://see	ACCESSION AL646078 AL646078 AL646078.1 GI:17430778  KEYWORDS  SOURCE  Ralstonia solanacearum  ORGANISM Ralstonia solanacearum  Bacteria; Proteobacteria; beta subdivision; Ralstonia group; Ralstonia.  REFERENCE 1 (bases 1 to 203050)  AUTHORS Salanoubat,M., Genin,S., Artiguenave,F., Gouzy,J., Mangenot,S., Arlat,M., Billault,A., Brottier,P., Camus,J.C., Cattolico,L., Chandler,M., Choisne,N., Claudel-Renard,C., Cunnac,S., Demange,N., Gaspin,C., Lavie,M., Moisan,A., Robert,C., Saurin,W., Schiex,T., Siguier,P., Thebault,P., Whalen,M., Wincker,P., Levy,M., Weissenbach,J. and Boucher,C.A.  TITLE JOURNAL Unpublished 2 (bases 1 to 203050) AUTHORS Boucher,C.A. Direct Submission  JOURNAL Submitted (05-DEC-2001) Genoscope and CNRS UMR-8030, 2 rue Gaston

CDS

gene

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drug/analog sensitivity"
/note=Product confidence: probable
Gene name confidence: putative
predicted by Codon_usage
predicted by Homology
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GVFGWFNRRFDRITQGYAARVGKLVTRTGRVMLVFGAIAAVLALAFRQLPSSFLPEED
QGYFMTTFQLPADATAERTLDVVKAFERHVASKASIQSNMSIVGFGFSGSGSNAAMAF
TMLKDWDARNGATAQNEMRLAQQAMAGATEGTVMSLLPPAIDELGTSSGFTLRLQDRA
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ARGILOVPLMIAMGASAETQHAIGTGVFGGMVSATVLAIFFVPVFFVFVMGLQERFEA
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ETLSTAIGSLYVNDFPNAGRMQQVIIQADAPARMQIDDVLKLYVRNAGGGMVPLSEVV
RPVNSETPLQLVRFQGFPAARISGNAAPGASSGAAMAEMERLAAQLPPGFAIAWTGQS
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AQVDVQNKLKAIEPKLPQVVRQNGLTVESASSGFLMIIGLQSDDGREDETALSDYMAR
NVVEELRRIEGVGRVQLFGABGAMRITMVDPAKLIAYGLSMNDLSAAISOQNAQIAPGS
VGASPALPAQRVTVPLTVQGQLTTPEQFAAIVLRANANGSKVVMGDVARVELGAQSYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="PROBABLE MULTIDRUG PROTEIN"
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/note="Product confidence : probable
Gene name confidence : putative
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                                                                                                                                                                                                                                                                              predicted by
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AVFIPMALASGSVGVIYQQFTLSMAVSIVFSAFLALTLTPALCATLLKPVDPAHHEKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FINRENGKAATAAAVQLAPGANAVRTAEGVQARMAELSRTMPAGMSYSIPENTAPFVK
ISIEKVIQTLIEAMVLVFLVMYLFLQNVRYTLIPAIVAPIALLGTFTIMLASGFSINV
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VWSFSPQ I TQPLFQGGRLRAELRLAELRKSSA I AEY ERT I QTAF REVADGLAGRATYG
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/db_xref="GI:17430780"
                                                                   /product="PROBABLE MULTIDRUG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="mexC"
/function="cell processes; protection responses;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="RSp0313; RS05456"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /protein_id="CAD17463.1"
/db_xref="GI:17430781"
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AHLELTEDLPGRVAAVRVAEIRPQVSGIVQRRLFEQGTEVRAGQPLFQINPAPFRADA
                                                                                                                                                                          /transl_table=1
                                                                                                                                                                                                                                          /codon_start=1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  codon_start=1
                                translation="MKIERLRRHGGVHVLLAAMLAGCGPSEPQSAPPAAEVATTTVAP"
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                                                                                                                                       EFFLUX SYSTEM PROTEIN"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EFFLUX SYSTEM TRANSMEMBRANE
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/product="PROBABLE TRANSMEMBRANE SENSOR KINASE
TRANSCRIPTION REGULATOR PROTEIN"
/protein_id="CAbl7466.1"
/db_xref="GI:17430784"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /product="PROBABLE TWO COMPONENT RESPONSE REGULATOR TRANSCRIPTION REGULATOR PROTEIN"

protein_id="Cabl7465.1"

/db_xref="G1:17430783"

/translation="MEILNORGAAAVPVMPPPSGAAQSAQALILIAEDEPEIADILAA

YLARSGLRSVHAADGREALELHLSLKPDLVLLDVQMPHVDGWKALSEIRHRGDTPVIM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               predicted by Codon_usage
predicted by Homology
predicted by FrameD**
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SLEALRQTLATQKTGAGDGLPVAVLRSNGEPYEAKGHILFSGINVDAGTGDVLLRVLV
NNPQRQLLPGMFVRARVPHARYTDALTVPQQAVVRVGGQPQVWTLDANSHARLKPVEL
                           CQASWLPTGPEWVWLIATTLAGLAMAIVVAVNLARRILVPLNSVADSLRRVARGDLGV
RAIAGDRSLGEAALLADDFNALADQLQRVTEEQVFWNAAIAHELRTPVTILRGRLQGL
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FQIDLDNHEATVQVGKQRHALALTLTEFKLLAQLARAPKRVFSRAELLAACLPEGDTL
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AEGVFTPDEPQFRSLLTQVESLTRLIEDLRYVSLAESGHLDLQVRESDLVAEVKAVVA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /gene="RSp0315"
/EC_number="2.7.-
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/note="RS05453"
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Gene name confidence : hypothetical
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/function="miscellaneous; not classified regulator"
                                                                                         translation="MKLAGLSRQIALSMMAMAFGVTLLVVLTSYAFYYLAMTYWSRDF"
                                                                                                                                                                                                                                          transl_table=1:
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                                                                                                                                                                                                                                                                                                                                                                                                              note="Product confidence : probable : probable : probable : name confidence : hypothetical
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AACCAGGAG-----GCCGCGCGCCGCCAGACCGATGCGCAATCGGCCGGCAGCCGCCCC
                           ThraspHisValPheAlaAlaHisLysLeuProProAlaAspSerAlaAspGlyGlnAla
                                                        AAGTCGCAGGCCGCGTCGTCCGGCGCCCGATACCTTCGGCAACCTGCTGTCGGATCGCCTG
                                                                                   SerValArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrLeu 49
                                                                                                                    CCCAATACCGCCGCGACCGACCTGGGCGCGATGCTGTCGAGCGCCGGCACGGCCGCCGAC
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GGCGCCAAGTTCGATGGCGTCCTGACGCGCCC----AACGGGGGATGCCGTCGCCACC 9568
                            AlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThrThrAspProAlaValLysLys
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                                                              ACCGGCCGCAACGCGGACACCAGCGGCAACCCCAACACGCCGATGCCCAGGGCGCC
                                                                                              ProAlaThrLysAlaAlaValSerGlnLeuThrAsn------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ArgGlnArgProAlaArg--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CACACCATGGCGAGCCAGCTGGCCTACATGCAGGTCCATCGCCAGTCGTCCGCCGAACTG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                HisThrGlyAlaSerLeu-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GCCGCGGTCACACCCGCGCAGGCGCATACCCTGCCGACCTTCGGCGATGCCGCCTGGCCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AlaAspGlnThrValLysLeuAlaLysThrValLysAspMetGlyGlyGluAlaIleThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GCGCCAACCTTC---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bacteria; Firmicutes; Actinobacteria; Actinobacteridae; Actinomycetales; Corynebacterineae; Mycobacterianeae; Mycobacterium; Mycobacterium tuberculosis complex.

1 (bases 1 to 40790)

1 (bases 1 to 40790)

1 (cle,S.T., Brosch,R., Parkhill,J., Garnier,T., Churcher,C., Harris,D., Gordon,S.V., Eiglmeier,K., Gass,S., Barry III,C.E., Harris,D., Gordon,S.V., Eiglmeier,K., Gass,S., Barry III,C.E., Tekaia,F., Badcock,K., Basham,D., Brown,D., Chillingworth,T., Tekaia,F., Badcock,K., Basham,D., Brown,D., Chillingworth,T., Connor,R., Davies,R., Devlin,K., Feltwell,T., Gentles,S., Hannin,N., Holroyd,S., Hornsby,T., Jagels,K., Krogh,A., McLean,J., Moule,S., Murphy,L., Oliver,S., Osborne,J., Quali,M.A., Rogers,J., Rutter,S., Seeger,K., Skelton,S., Squares,S., Sqares,R., Sulston,J.E., Taylor,K., Whitehead,S. and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      40790 bp
Mycobacterium tuberculosis H37Rv
Z95844 AL123456
Z95844.1 GI:325071?
                                                Gene prediction was based on a Hidden Markov Model of TB genes implemented in TBparse (Krogh) supplemented with visual inspection of positional base preference in codons, especially where there is an increase in the observed/expected third position G + C. CAUTION: In some cases we may not have predicted the correct initiation codon. Where possible we choose an initiation codon (atg, gtg, or ttg) which is preceded by an upstream ribosome binding site sequence (optimally 5-13bp before the initiation codon). If this cannot be identified we choose the most upstream
                                                                                                                                                                                                                                                                                                               available on the World Wide Web. (URL, http://www.sanger.ac.uk/Projects/M_tuberculosis/) CDS heen renumbered from the original cosmid submissions but the been renumbered from the original cosmid submissions but the gene designations are in brackets after the new gene numbers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                On Jun 24, 1998 this sequence version replaced gi:2131042.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tuberculosis sequencing and mapping teams, Sanger Centre, Wellcome Trust Genome Campus, Hinxton, Cambridge CB10 1SA Unite de Genetique Moleculaire Bacterienne, Institut Pasteur, 28 rue du Docteur Roux, 75724 Paris Cedex 15, France E-mail: parkhill@sanger.ac.uk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Submitted (11-JUN-1998) Submitted on behalf of the Mycobacterium
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Nature 393
98295987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mycobacterium tuberculosis H37Rv. Mycobacterium tuberculosis H37Rv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Direct Submission
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Parkhill,J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Deciphering the biology of Mycobacterium tuberculosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Barrell, B.G.
                           initiation codon
                                                                                                                                                                                                                                                                                                                                                                                                                                      Details of M. tuberculosis sequencing at the Sanger Centre are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  9634230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complete genome sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (bases 1 to 40790)
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (6685),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         537-544 (1998)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----ArgAsnThrValAsnAsnLeu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -GluAlaAspIleGluGluGlyGly 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         genome;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        95958
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BCT 03-AUG-2001 segment 63/162.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95855
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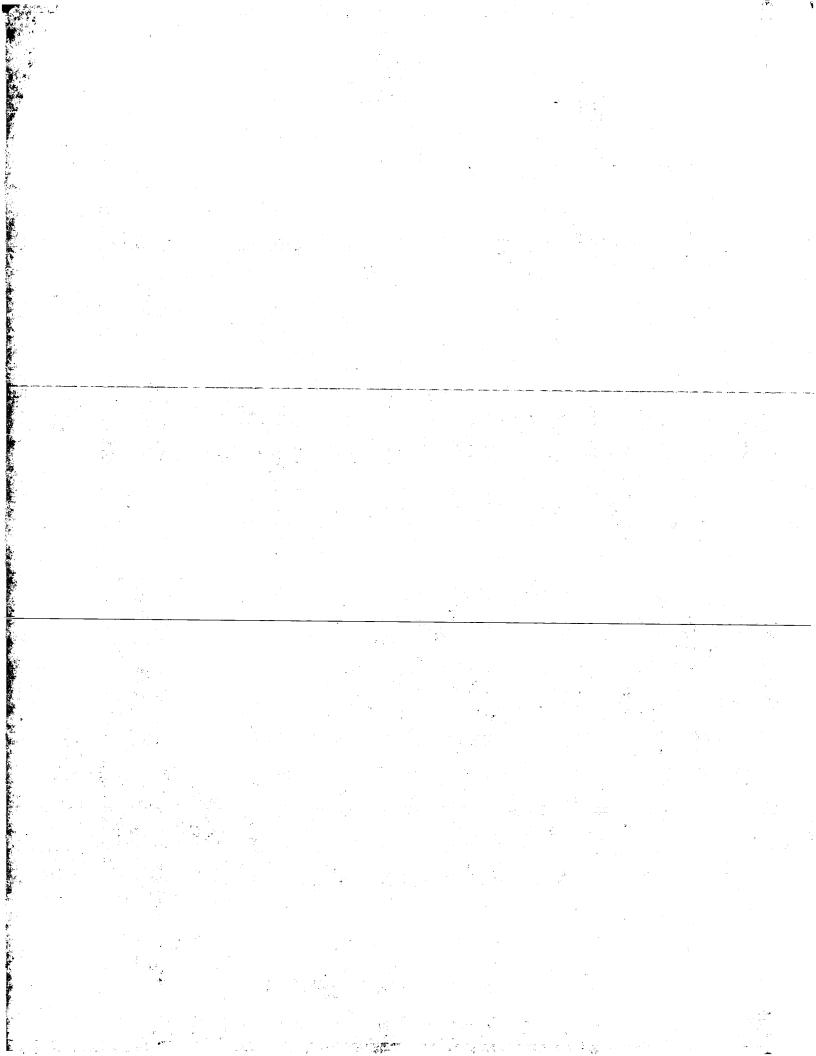
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gene
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                        /note="Rv1426c, (MTCY493.28), len: 420. Unknown, possibleesterase, similar to MTCY493.28, MTCY08D5.15, possibleesterase, similar esp. in C-terminus to M. MTCY21B4.16chighly similar esp. in C-terminus to M. tuberculosis hypothetical protein Q50681 (431 aa) (50.1% identity in 411 aa overlap), and also similar in central region to AAAD_HUMAN P22760 arylacetamide deacetylase (398 aa), fasta scores; opt:210 z-score: 248.8 E(): 7.6e-07, fasta scores; opt:210 z-score: 248.8 E(): 7.6e-07,
                                                                                                                                                                                                                                    complement(2176. .3438)
/gene="lipo"
complement(2176. .3438)
/gene="lipo"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /db_xref="SWISS-PROT:P71694"
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/translation="MKRLSSVDAAFWSAETAGWHMHVGALAICDPSDAPEYSFQRLRE
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GRLMSYKLDRSRPLWBLWVIEGVEGGRIATLTKMHHAIVDGVSGAGLGEILLDITPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /note="Rv1425, (MTCY21B4.43,MTCY493.29c), len: 459. Similar to many M. tuberculosis hypothetical proteins e.g MTCY28.26, fasta scores; E(): 0, 36.3% identity in 460 aa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note-"Rv1424c, (MTCY21B4.42c,MTCY493.30), len: 253. Possible membrane protein, contains PS00402 Binding-protein dependent transport systems inner membrane comp signature."
                                                                                                                                                                                                                                                                                                                                                                                     SAKEMAKAPSAHQIMGLTETTPPGLLQLAARAYTASGLSHNLAPINLVVSNVPGPPFP
LYMAGARLDSLVPLGPPVMDVALNITCFSYQDYLDFGLVTTPEVANDIDEMADAIEPA
                                                                                                                                                                                                                                                                                                                                                                                                                                        RPPQQETVGFVGFQIPGLERRAIGALINVGIMTPFRIVRLLEQTVRQQIAALGVAGKP
ARYFEAPKTRFNAPVSPHRRVTGTRVELARAKAVKDAFGVKLNDVVLALVAGAARQYL
QKRDELPAKPLIAQIPVSTRSEETKADVGNQVSSMTASLATHIEDPAKRLAAIHESTL
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complement(520. .606)
/gene="Rv1424c"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /db_xref="SWISS-PROT:P71693"
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KLAPSRPQVVACDSREARIRNDGFHANAPSCMRIDYELITQNHRAYYCLKYLVRVGYC
YPAVTTPGKPPSVLLYAPSACDESLPSPRVATALVPGTRSANREFSRFVVTEIKSLGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /product="hypothetical
/protein_id="CAB09245...
/db_xref="GI:2131071"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /gene="Rv1424c"
/note="pr.,...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /gene="Rv1424c"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GGRCDSASVSLQPPEEIEGPAIPPASSQLVCVAPK"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /product="hypothetical protein Rv1424c"
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/db_xref="GI:2131072"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /organism="Mycobacterium
/strain="H37Rv"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /db_xref="taxon:83332"
<1. .1638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /organism="Mycobacterium tuberculosis H37Rv"
/strain="H37Rv"
                                                                                                                                                                                                                                                                                                                                                             LAELERAAE"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /transl_table=11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /gene="Rv1425"
/note="Rv1425,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="PS00402 Binding-protein-dependent transport systems
inner membrane comp signature"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
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/clone="Y493"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /strain="H37Rv"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /clone="Y21B4"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /db_xref="taxon:83332"
         3% identity in 191 aaoverlap"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Rv1425"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ı protein Rv1425"
.1"
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                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene
                                                                                          RBS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                misc_feature
'gene="Rv1429"
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/note="Rv1428c, (MTCY493.26), len: 275. Unknown, son similarity to Yv29_MYCTU Q11167 hypothetical 39.3 kc protein cy2099.29 (358 aa), fasta scores; opt: 355 z-score: 413.6 E(): 5e-16, 32.6% identity in 273 aa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation="mrirqafgliatmrragliaplrpdrylrivaamrregmgftag
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rhhatglvvvpymfdrimdlfaeirnrydgrslrfaaasgsrmrpdvviafmdgegdv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        long chain long-chain-fatty-acid-CoA ligase similar to eg. PC60_YEAST P38137 peroxisomal-coenzyme a synthetase (543 aa), fastascores; opt: 507_z-score: 579.4 E(): 2-9e-25. 30.4% identity in 365 aa overlap Contains PS00455 Putative AMP-bindingdomain signature. Also similar to many M.
                                                                                                                                                                                                                                   /translation="msetdspgngddagigdigkfdpgltqrlisvlrpvlktyhrsq
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blfrrtgyiratrenaakalrsggvvvvfpggdydayrptfaenvidfngrkgyvsta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complement(5048. .5050)
/note="possible RBS upstream of Rv1427c"
complement(5049. .5876)
/gene="Rv1428c"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IYNNYNATEAGMIATATPADLRTAPDTAGRPAEGTEIRILDQQFTEVPTGEVGTIYVR
NDSQFDGYTSGAAKDFHAGFMSSGDVGYLDENGRLFVVGRDDEMIVSGGENIYPIEVE
KTLATHPDVAEAAVIGVDDQQYGQRLAAFVVLKPGVSATPETLKQHVRDNLANYKVPR
/note="possible 5995. .7263
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/protein_id="CAB09256.1"
/db_xref="GI:2131068"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   overlap"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           complement(5049. .5876)
/gene="Rv1428c"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  complement(4422. .4457)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DIAVLDELPRGITGKILRTELQSRVGS"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /protein_id="CAB09257.1"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                aa overlap)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            tuberculosisproteinseg. MTCY06A4.14 (44.8% identity in 525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      complement(3438. .5045)
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FQPGFEQVDTSVAAAVPVYGRYDWFTTDAPGRREFVGLLETFVVKRKFSTHRDIFVDA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /translation="mrfrrmarprpltraavellnaanglrplsGSGYSTvlafwlgw
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                                                                                                                                                                    PNLPLPAKIVMQVLDPINLTKQFGEDPDVDAVDEHVRSVMQQALNDLAAKRRFPILG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          codon_start=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /transl_table=11
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                                                                                                                                 ement(5882.
                                   RBS
                                                                                                                                        . 5885)
                               upstream of Rv1429"
                                                                                                  upstream of Rv1428c*
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298 34049	LeuLysAspLysGluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyr	279 33990	g g
278 33989	GlnArgGlyGlyAlaLeuValLeuGly	259 33933	д 8
258 33932	ValAspLeuGlyValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGly	241 33873	рь
240 33872	ProAlaLeuAlaSerArgProAlaValGlnGlyAla	229 33813	В <b>б</b>
228 33812	AspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaValArgThrValLeuAla	209 33777	g 9
33776		33776	ф
80	.saspAlaMetAlaAlaSerValLysArgHisSerProSerLeuAlaArgGlnValLeu	18	ργ
188 33776	LysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSerAlaSerProAspArgLeu	169 33765	B 6
168 33764	LysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThr .::    :::    :::	149 33708	<b>Q</b>
148 33707	SerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAlaProLeu :::	129 33669	д <b>о</b>
128 33668	LeuAspArgLeuAlaThrThrThrSerGlyAlaLeuArgAlaThrProPheAlaMetAla	109 33615	Db Qq
108 33614	LeuHisPheGluGlyGluThrProAlaThrIleAlaAspThrPheAlaLysAlaGluLys	89 33576	B 8
88 33575		76 33531	D 04
75 33530	AspSerAlaAspGlyGlnAlaAlaValAspValHisAsn    ::     ACACCCTGGATTCCGTTCTGGCCAAAGAGGTTCCCCGC	56 33471	ρ γ
55 33470	SerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrLeuThrAspHisValPheAla	36 33411	g 49
35 33410	AlaSerSerSerValArgSerValSer 3GGGTTACCGCCGTTACCATC	20 33351	B 84
	-414-7 (1-486) x MTCY493 (1-40790)	09-825	us-
	: Scores: 346 Length: 40790 : 151.00 Matches: 122 imilarity: 33.91% Conservative: 53 it Similarity: 23.64% Mismatches: 193 ich: 6.26% Indels: 148 Gaps: 21	nment . No. e: ent s ent s Loca y Mat	Alig Pred Scor Perc Best Quer DB:
kd	<pre>/gene="Rv1429" /note="Rv1429, (MTCY493.25c), len: 422. Unknown, stimilarity to YAEG_ECOLI P37047 hypothetical 44.3</pre>		

34050 ATCGAACGTGCCCTTGGCACCGTTGCCGCCATCACCGCCATGCCGCCGCGGCCCCCCCTT 34109 312 ASNALAGIY

Search completed: January 31, 2003, 06:27:14 Job time: 3367.79 secs



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-LOOPEXT=0 -UNITS-bits -STARF=1 -END--1 -MATRIX=blosum62 -TRAMS-human40.cdi
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
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Maximum DB seq length: 2000000000
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Perfect score:
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-MODEL=frame+_p2n.model -DEV=xlp
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OM protein - nucleic search, using frame_plus_p2n model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   January 31, 2003, 02:18:04 ; Search time 238.754 Seconds (without alignments) 4584.089 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N_Geneseq_101002:*
1: /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1980.DAT:*
2: /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1981.DAT:*
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2412
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3: /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1987.DAT:*

3: /SIDS2/gcgdata/geneseq/geneseqn-emb1/NA1988.DAT:*

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /SIDS2/gcgdata/geneseq/geneseqn-embl/NA1982.DAT:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

	∪ 4 4 4 4 4 4 20 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0 0	000	9 111 12 13 13 14 14 15 16 17 17	0000	Result No.
		132. 132. 132. 131. 131. 131.		143. 142. 142. 142. 142. 143. 134. 138. 137. 137. 137.	241 241 241 1869. 1669. 168. 148.	Sco
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	1800 2916 44377 44377 3606 7035 9345	65140 125401 4403769 47981 6258 17388 17536	2530 29069 29080 349980 9365 2287 5036 1491 1924	11883 1801 7545 7615 7657 2466 5378 1821 4411529 2700 12036 3256	1461 1461 30365 1464 4403765 4411529 4645	Length
	23 23 23 23			10 10 10 10 10 10 10 10 10 10 10 10 10 1		DB
ALIGNMENTS	ABK1413/ ABL12469 AAT78508 AAT80414 ABL09625 ABL09625 ABS54978 ABC09624	AAD17184 AAD17186 AAT199683 AAF30757 AAS52002 AAS54875 AAA14651	AAV5249/ AAA54239 AAA81497 AAF21609 ABL25113 ABL25112 AAD28342 AAD13450 AAS13450 AAS72303	AAA10263 AAZ20203 AAK51943 AAK51943 AA158448 AA158468 ABL27385 AAV21187 AAS81976 AAS81976 AAS819682 AA002810 AA004668 AAV2204	AAD20408 AAF55683 AAD20405 AAD20438 AAD20438 AAI99683 AAI99682 AAI918181 AAD21471	ID
	Drosophila melanog Platenolide syntha Platenolide syntha Platenolide syntha Drosophila melanog Staphylococcus aur Drosophila melanog	Streptomyces nours Streptomyces nours Mycobacterium tube Micromonospora meg Staphylococcus aur Staphylococcus aur Nucleotide sequenc	Neisseria meningit N. meningitidis pa Neisseria meningit Drosophila melanog Drosophila melanog Mycobacterium spec Mycobacterium tube Human novel cytoki Lymphona associate DNA encoding lymph		P. syringae pv.tom Nucleotide sequenc P. syringae pv. to Pseudomonas syring Mycobacterium tube Mycobacterium tube Lactobacillus rham Extracellular fact	ripti

## ALIGNMENTS

RESULT 1

	ғн кеу	××	OS Pse	××	KW euk			xx			AC AAD	ID AAD	AAD20408
Location/Qualifiers			Pseudomonas syringae.		eukaryotic cell death; cancer; ds.	<pre>Exchangeable Effector Loci; EEL; disease resistance; transgenic plant;</pre>	Conserved Effector Loci; CEL; cytostatic; antibacterial; gene therapy;		P. syringae pv.tomato (Pto) DC3000 CEL open reading frame 5 (ORF5) DNA.	03-JAN-2002 (first entry)	AAD20408;	AAD20408 standard; DNA; 1461 BP.	

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Alignment
Pred. No.:
Score:
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Best Local Similarity:
Query Match:
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                                                                                                                                                                             US-09-825-414-7
                      ₽
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CC genomic sequences. CEL and EEL DNA are useful for imparting disease
CC resistance to a plant, by transforming a plant cell with the nucleic acid
CC and regenerating a transgenic plant from the transformed plant cell,
CC where the transgenic plant expresses a heterologous DNA molecule under
CC conditions effective to impart disease resistance, or by treating a plant
CC with an isolated protein or polypeptide, by applying the protein or
CC polypeptide in an isolated form or by applying a non-pathogenic bacteria
CC which secretes the protein or polypeptide, under conditions effective to
CC impart disease resistance to the treated plant. CEL and EEL proteins
CC are useful for causing eukaryotic cell death, by introducing a cytotoxic
CP seudomonas protein into a eukaryotic cell under conditions effective to
CC cause cell death. CEL and EEL proteins are also useful for treating a
CC cancerous condition, by introducing a cytotoxic Pseudomonas protein into
CC cancer cells of a patient under conditions effective to cause death of
CC cancer cells, and thus treating the cancerous condition. The method
CC comprising a DNA molecule encoding the cytotoxic Pseudomonas protein,
CC comprising a DNA molecule encoding the cytotoxic Pseudomonas protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          03-APR-2000;
11-AUG-2000;
17-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (CORR )
(UYNE-)
(UYNE-)
                                                                                                                                                                                                                                                                                                                                                                          Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                    DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Claim 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New nucleic acid molecules encoding proteins or polypeptides or Pseudomonas Conserved Effector Loci and Exchangeable Effector genomic sequences, for imparting disease resistance to plants
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   P-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Collmer A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       03-APR-2001;
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                                                                                                                                                                                                                                                                                                                 No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conserved Effector Loci (CEL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              nucleotide
                      61
                                                          21
                                                                                                                                      \mathbf{L}
                                                                                                                                                                                                                                                                                                                                                                                                            the patient, where the targetted DNA delivery system delivers the molecule into cancer cells and the cytotoxic Pseudomonas protein expressed in the cancer cells. The present sequence is sudomonas syringae pv. tomato (Pto) DC3000 CEL ORF5 DNA.
                                        AlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerSerAspGlnGlnArg
                                                                                                                  MetHisIleAsnArgArgValGlnGlnProProValThrAlaThrAspSerPheArgThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2001-639361/73
                      GCGTCCGACGCGTCTCTTGCCTCCAGCTCTGTGCGATCTGTCAGCTCCGATCAGCAACGC
                                                                                                ATGCACATCAACCGACGCGTCCAACAACCGCCTGTGACTGCGACGGATAGCTTTCGGACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CORNELL RES FOUND UNIV NEVADA & COM-
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                                                                                                                                                                           (1-486)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Alfano JR,
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The present sequence encodes a HopPtoA protein of Pseudomonas syringae pv. tomato DC300 CEL.. This is an effector protein, which is used in the method of the invention. The specification describes a method for delivering effector proteins into a target cell. The method comprises introducing an effector protein fused to a protein transduction domain of a human immunodeficiency virus (HIV) tat protein into the target cell. The method is used for delivering a heterologous effector protein such as an effector protein produced by bacterial plant pathogen, animal pathogen or a rhizosphere bacteria, or a protein secreted and/or delivered into eukaryotic cells by a Type III secreted and/or delivered into eukaryotic cells by a Type III secreten, a hypersensitive response elicitor, an avirulence protein, a hypersensitive response and pathogenicity-dependent outer protein, a
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21 AlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerSerAspGlnGlnArg 40	ATGCACATCAACCGACGCGTCCAACAACCGCCTGTGACTGCGACGGATAGCTTTCGGACA 60	1 MetHisIleAsnArgArgValGlnGlnProProValThrAlaThrAspSerPheArgThr 20	

180 60 120

CCGGCCGATTCGGCTGATGGCCAAGCTGCAGTTGACGTACACAATGCGCAGATCACTGCG ProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGlnIleThrAla 240 80

CTGATCGAGACGCGCCAGCCGCCTGCACTTCGAAGGGGAAACCCCGGCAACCATCGCC LeuIleGluThrArgAlaSerArgLeuH1sPheGluGlyGluThrProAlaThrIleAla 300 100

AspThrPheAlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeu GACACCTTCGCCAAGGCGGAAAAGCTCGACCGATTGGCGACGACTACATCAGGCGCGTTG 360 120

140

LeuSerAlaSerProAspArgLeuHisAspAlaMetAlaAlaSerValLysArgHisSer

ProSerLeuAlaArgGlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArg CCAAGCCTTGCTCGACAGGTTCTGGACACGGGGGTTGCGGTTCAGACGTACTCGGCGCGC

AsnAlaValArgThrValLeuAlaProAlaLeuAlaSerArgProAlaValGlnGlyAla AACGCCGTACGTACCGTATTGGCTCCGGCACTGGCGTCCAGACCCGCCGTGCAGGGTGCT

> 240 660

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11-AUG-2000;
17-NOV-2000;
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(UYNE-)
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CC indicatide sequence encoding proteins or polypeptides of Pseudomonas
CC Conserved Effector Loci (CEL) and Exchangeable Effector Loci (EEL)
CC Generating sequences. CEL and EEL DNA are useful for imparting disease
CC credistance to a plant, by transforming a plant cell with the nucleic acid
CC and regenerating a transgenic plant from the transformed plant cell,
CC where the transgenic plant expresses a heterologous DNA molecule under
CC conditions effective to impart disease resistance, or by treating a plant
CC with an isolated protein or polypeptide, by applying the protein or
CC polypeptide in an isolated form or by applying a non-pathogenic bacteria
CC which secretes the protein or polypeptide, under conditions effective to
CC impart disease resistance to the treated plant. CEL and EEL proteins
CC are useful for causing eukaryotic cell death, by introducing a cytotoxic
CC sequedomonas protein into a eukaryotic cell under conditions effective to
CC carder cell death. CEL and EEL proteins are also useful for treating a
CC carder cells of a patient under conditions effective to cause death of
CC carder cells, and thus treating the cancerous condition. The method
CC carder cells, and thus treating a targetted DNA delivery system
CC to the patient, where the targetted DNA delivery system delivers the
CC by encompassed in the cancer cells. The present sequence is
CC pseudomonas syringae pv. tomato (pto) DC3000 CEL DNA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Disclosure; Page 9-17; 217pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      New nucleic acid molecules encoding proteins or polypeptides of Pseudomonas Conserved Effector Loci and Exchangeable Effector Locionic sequences, for imparting disease resistance to plants
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Score: Percent Similarity:
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Query Match: Alignment Similarity: 1.32e-167 2412.00 100.00% 100.00% 100.00% 100.00% Mismatches: Indels: Matches: Conservative: 30365 486 0 0 0 0

Sequence 30365

BP;

6828 A;

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3 other;

Scores:

US-09-825-414-7 (1-486) x AAD20405 (1-30365)

Gaps:

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ArgAlaThrProPheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLys

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Pseudomonas syringae eukaryotic Exchangeable Effector cell death; cancer; ds. Location/Qualifiers Loci; L; cytostatic; EEL; disease resistance; antibacterial; gene therapy;
resistance; transgenic plant;

/\*tag= a /product= "P. syringae pv. tomato HopPtoA2 protein"

WO200175066-A2

03-APR-2001; 11-OCT-2001 2001WO-US10698

03-APR-2000; 11-AUG-2000; 17-NOV-2000; (CORR ) (UYNE-) CORNELL RES FOUND UNIV NEVADA & COMPONIV NEBRASKA. ; 2000US-194160P. ; 2000US-224604P. ; 2000US-249548P. COMMUNITY COLLEGE SYSTEM

Collmer A, Alfano JR, Charkowski AO

2001-639361/73. DB; AAE12603.

P-PSDB;

genomic New nucleic acid molecules encoding proteins or polypeptides of Pseudomonas Conserved Effector Loci and Exchangeable Effector L for imparting disease resistance 6

Claim 1; Page 64; 217pp;

CC onserved Effector Loci (CEL) and Exchangeable Effector Loci (EEL)
CC genomic sequences colding proteins or polypeptides of pseudomonas
CC conserved Effector Loci (CEL) and Exchangeable Effector Loci (EEL)
CC genomic sequences. CEL and EEL DNA are useful for imparting disease
CC resistance to a plant, by transforming a plant cell with the nucleic acid
CC and regenerating a transgenic plant from the transformed plant cell,
CC where the transgenic plant expresses a heterologous DNA molecule under
CC conditions effective to impart disease resistance, or by treating a plant
CC with an isolated protein or polypeptide, by applying the protein or
CC polypeptide in an isolated form or by applying a non-pathogenic bacteria
CC which secretes the protein or polypeptide, under conditions effective to
CC impart disease resistance to the treated plant. CEL and EEL proteins
CC are useful for causing eukaryotic cell under conditions effective to
CC cause cell death. CEL and EEL proteins are also useful for treating a
CC cancer cells of a patient under conditions effective to
CC cancer cells and thus treating the cancerous condition. The method
CC cancer cells, and thus treating the cancerous condition. The method
CC cancer cells, and thus treating the cancerous condition. The method
CC comprising a DNA molecule encoding the cytotoxic Pseudomonas protein
CC to the patient, where the targetted DNA delivery system delivers the
CC DNA molecule into cancer cells and the cytotoxic Pseudomonas protein
CC encoding pseudomonas syrings a protein into septements a protein
CC concerns a patient of the cancer cells and the cytotoxic pseudomonas protein
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CC concerns a protein cells and the cytotoxic pseudomonas protein
CC concerns a protein cells and the cytotoxic pseudomonas protein
CC concerns a protein cells and the cytotoxic pseudomonas protein
CC concerns a protein cells and the cytotoxic pseudomonas prote The invention relates to an isolated nucleic acid molecule comprising

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Sequence

1464

BP; 325

A; 392

C; 442

G; 305 T; 0

other;

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      Evaluating strain variation of Mycobacterium tuberculosis, compudetermining the nucleotide sequence of the strain at positions i genome corresponding to positions where M. tuberculosis strains 1551 and H37Rv differ -
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                                                                 Fleischmann
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epidemiology; patient treatment; epidemic
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The invention relates to evaluating strain variation within and between different populations of the tuberculosis bacterial pathogen, Mycobacterium tuberculosis or related Mycobacterium by determining the nucleotide sequence of the first strain at positions in the complete sequence of the genome that correspond to positions that differ in the nucleotide sequences of M. tuberculosis strains CDC 1551 (AAI99683) and H37Rv (AAI99682). The method is useful for evaluating strain variation of tuberculosis and has valuable application in the fields of the tuberculosis and has valuable application in the fields of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 4403765 BP; 757105 A; 1447799 C; 1441301 G;
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                                                                                                                                      320 euProLeuAspMetAlaThrAspAlaMetGly---AlaValArgSerLeuValSerAlaS 339
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358 euGlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAlaAlaValSerGlnL
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The invention relates to evaluating strain variation within and between different populations of the tuberculosis bacterial pathogen, Mycobacterium tuberculosis or related Mycobacterium by determining the nucleotide sequence of the first strain at positions in the complete sequence of the genome that correspond to positions that differ in the nucleotide sequences of M. tuberculosis strains CDC 1551 (AAI99683) and

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                                                New polynucleotides and polypeptides from Lactobacillus rhamnosus, useful in e.g. improving the flavor, aroma, texture and health-related benefits of milk-derived products, or in increasing properties of
                                                                                                                                                                                                                                                 Glenn M, Hav
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             derived products such as cheeses, yogurt, fermented milk products, sour milks and buttermilk; in modifying the flavour, aroma, texture and health related benefits of milk-derived products and in increasing the survival of microbes during industrial fermentation processes. The bacteria may be used to increase resistance to enteric pathogens and anti-infection activity, including treatment of rotavirus infection and infantile diarrhoea; aid in lactose digestion; as anti-cancer and anti-mutagenesis; liver cancer reduction; reduction of small bowel bacterial overgrowth; liver cancer reduction; reduction of small bowel bacterial overgrowth;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           immune system modulation and treatment of autoimmune disorders and altergies; treatment of altergic responses to foods; reduction of blood lipids and prevention of heart disease; antihypertensive effect; prevention and treatment of urogenical infections, Helicobacter pylori, or hepatic encephalopathy; treatment of inflammatory bowel disorder and irritable bowel syndrome; modulation of endocarditis; and for improved protein and carbohydrate utilization and conversion. The transgenic microbial population can be administered to a mammal as an anticarcinogenic agent. The present sequence is Lactobactillus rhammosus outer membrane protein rompA gene.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 present invention relates to a new isolated polynucleotide comprising equence present in Lactobacillus rhamnosus strain HN001 and encoding a ypeptide capable of modifying the flavour, aroma, texture, nutritional health benefits of milk-derived products, and/or survivability of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CATGCCAGCACCGCTGCGAGTGCGGCATCCAGCTATCCGAAGGATAGTGGGATTCAGTCA
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----ProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAla------Me 163
                                                                                                                                                                                                                         GCAAGTGCCGATGTGGCAAGCAGTGCGGCCAGCACGGCTAACAGTAATGCGAGTGCC 3223
                                                                                                                                                                                                                                                                                                           AGCGCCGCGGCCGTTGGTTTCAGTGCTGCCAGTGATGCAAGTGAACAGGCGAAGACGGCT 3163
                                                                                                                                                                                                                                                                                                                                                                                           CTAGCCAGTCAGGCTGCAAGCGAGGCAGCAAAGGCAAGCAGTAACGCGAGTGCCGCAACC
                                                            AGTGCTGCAGCAAGCAGTGCCAAGGGTGCAGAAG-----CAGTTGCCAGCGAAGCGGCG 3337
                                                                                                                                            GCAGCCAGTGCGACCAAGGCTGGTGATAGCAAAGCCGCAGCAGGATTCTCGAGTGCAGCG 3283
                                                                                                                                                                                  AlaLysAlaGluLysLeuAspArgLeuAlaThrThrThr-----SerGly 118
                                                                                                                                                                                                                                                                                                                                                  ArgAlaSerArgLeuHisPheGluGlyGluThrProAlaThr---IleAlaAspThrPhe 103
                                                                                                                                                                                                                                                                                                                                                                                                                                    AlaAspGlyGlnAlaAlaValAspValHisAsnAlaGlnIleThrAlaLeuIleGluThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TyrLeuThrAspHisValPheAlaAlaHisLysLeuProPro---
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                                                                                                 -LeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAla-----
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455 nAsnLeuArgGlnArgProAlaArgGluAlaAspIleGluGluGlyGlyThrAla 473 : :	Qy Db
435 llysaspMetGlyGlyGluAlaIleThrHisThrGlyAlaSerLeuArgAsnThrValAs 455	ОУ
424 1AlaAspGlnThr	Db Qy
404 salaGluSerPheIleGlnAspThrValLysSerThrAlaSerSerThrThrGlyTyrVa 424	Qy Db
391 pThrThrAlaAlaLeuThrThrAspPToAlaValLysLy 404	Qy Db
371 rLysAlaAlaValSerGlnLeuThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTr 391        :::	Оy
351 yeneAlaGIYVA1GIYLYSLEUGINGIUMETA.AThTLYSASNIIEThrAsperoAlaTh 3/1 4010	Db Q
31 AVALAEJSETLEUVALSETALASETSETLEUTTGINASIGLYLEUHIALEUHIAGJYGI 3 51 TGCTANGAGCGCTGAAAGTCAAGCAAGCAGTGCCGCCAGTGCTGCTGCTGCT	Db 49
SArgMetAlaGlyLeuProLeuAspMetAlaThraspAlaMetGlyAl 3	о О
uGluAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLy 3 : : : :         : : :	Оy
275 uValleuGlyLeuLysAspLysGluProLysAlaGlnLeuSerGluGluAsnAspTrpLe 295 :::    ::::::     :: 3781 ATCGTCGGCTGCAAGTCATGCTAGTGAACAAGCAAGTATTGCTTCCAGTGAGGATGTTGT 3840	ОУ
aGlyPheGlyAsnArgLeuLeuSerValGlnSerArgAspHisGlnArgGlyGlyAlaLe 2	Qу
235 OAlaValGInGlyAlaValAspLeuGlyValSerMetAlaGlyGlyLeuAlaAlaAsnAl 255 :::               :::	Qу
223 1ArgThrValLeuAlaProAlaLeuAlaSerArgPr 235 :::       ::	Qy
218SeralaArgAsnAlaVa 223 218SeralaArgAsnAlaVa 223 3559 GAGTGCCAGTGAAGCCGGTTCATATGCTCATCAGGCAGGC	Qу Db
203 uAlaArgGlnValLeuAspThrGlyValAlaValGlnThrTyr	Оу
183 aSerProAspArgLeuHisAspAlaMetAlaAlaSerValLysArgHisSerProSerLe 203 	Оу
3338 AGTGCCGCGGCATCCGATGACTCG-GTAGCTTCTAGTGCCGCCAGTGCGGCTGCAGGCTT 3396 163 tAspGlnValGlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSerAl 183         : : :	Db Db
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Deoxyribonucleic acid encoding virulence characteristic of Streptococcus suis - useful for antibody and polypeptide diagnosing and preventing infections in pigs and humans
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This sequence represents the filamentous haemagglutinin gene, fhab, from Bordetella pertussis. Bordetella pertussis is a small Gram negative bacillus found only in humans and which causes whooping cough (pertussis) in children. Filamentous haemagglutinin (FHA) is a 368 kD surface-sociated protein which is thought to be one of the most important factors in mediating the adhesion of the bacterium to a eukaryotic (human) cell. FHA also stimulates an immune response in humans following disease, and has been shown to act as an immune products, are used for animal model. The FHA gene, or its expression products, are used for prevention or treatment of pertussis, particularly in vaccines. It may also be used to increase the amount of FHA in live or dead Bordetella pertussis or other organisms. Fragments of the gene may be used as diagnostic hybridisation probes or as antisense modulators to reduce the used in immunoassays to detect anti-FHA antibodies, and to raise antibodies for the diagnosis, prevention of treatment of whooping cough.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (RELM/) RELMAN D A. (DOME/) DOMENIGHINI : (RAPP/) RAPPUOLI R. (FALK/) FALKOW S.
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                         277 uGlyLeuLysAspLysGluProLysAlaGlnLeuSer---GluGluAsnAspTrpLeuGl 296
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                                                                                     yAsnArgLeuLeuSerYalGlnSerArgAspHisGlnArgGly---GlyAlaLeuValLe
                                                                                                                      CGCAGCCGTGGC----GCCGTCACCGTCAGCGGCGGCGGCGCCGTCAACCTGGGC----
                                                                                                                                           nGlyAlaValAspLeuGlyValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGl
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PT New fusion proteins useful for diagnosis, prevention and treatment PT tuberculosis -	DR P-FSDB; AAY32068.	PI Skeiky YAW, Alderson M, Campos-Neto A;	PA (CORI-) CORIXA CORP.	PR 07-APR-1998; 98US-0056556. PR 30-DEC-1998; 98US-0223040.	PF 07-APR-1999; 99WO-US07717.	PD 14-0CT-1999.	PN W09951748-A2.	08 Mycobacterium tuberculosis.	<pre>KW Tuberculosis; antigen; fusion protein; Mtb61f; TbH9; DPV; MTI; KW diagnosis; therapy; vaccine; immunogen; ss. xx</pre>	DE Mycobacterium tuberculosis antigen fusion protein Mtb61f DNA.	DT 17-JAN-2000 (first entry)	AC AAZ20203;	RESULT 10 AAZ20703 ID AAZ20203 standard; DNA; 1801 BP. XX	2865 CGCCAATCGCGACGTTCGG 28	445 s	Qy 429   LysLeuAlaLysThrValLysAspMetGlyGluAlaIleThr	412 TVALLYSSETINTALASETSETSTTTTNTGLYTYTVALALAASPGLNTHT :::            2745 AGCCCGCAGTCTTGCCGACATTTCGCTGGGGGGGGGAAGGCGGCGCCACGCTGGGCGCGC	268b CTCCTTCGBACGGCGCGATCAGCGTGTCCGGGGGGCGATGGGGTCAGGGTCGAT	395 -	Qy 382AlaGlySerAlaAlaValPheAlaGlyTrpThrThrAla	Qy 368	2505 GA	353 aGlyValGlyLysLeuGlnGluMetAla	QY 33 gSerLeuYalSerAlaSerSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAl	2397	Qy 313 aGlyLysArgMetAlaGlyLeuProLeuAspMetAlaThrAspAlaMetGlyAlaValAr	2337 GGCCGGGTTC	296 u
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                                                                                                                 cDNA;
                                                                                                                                                                                                                             ------CTCATGACGATTAATTACCAGTTCGGGGACGTCGAC 1488
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27-APR-2000;
20-JUN-2000;
19-JUL-2000;
01-SEP-2000;
15-SEP-2000;
20-OCT-2000;
                                                                                                                                                                                                                                                                                                                                                                                               The invention relates to polynucleotides (AAK51456-AAK53435) and the encoded polypeptides (AAM78323-AAM80302) that exhibit activity elating to cytokine, cell proliferation or cell differentiation or which may induce production of other cytokines in other cell populations. The polynucleotides and polypeptides are useful in gene therapy, vaccines or peptide therapy. The polypeptides have various cytokine-like activities, e.g. stem cell growth factor activity, haematopoiesis regulating activity, tissue growth factor activity, haematopoiesis regulating activity, tissue growth factor activity, in the diagnostis and/or treatment of cancer, leukaemia, nervous system disorders, arthritis and in the diagnostis and/or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Tang
Zhao
  1001
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 1; Page 1755-1761; 6221pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Nucleic acids encoding polypeptides with cytokine-like activities, useful in diagnosis and gene therapy -
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tissue growth factor; immunomodulatory; cancer; leukaemia;
nervous system disorder; arthritis; inflammation; ss.
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                          ThraspHisValPheAlaAlaHisLysLeu----ProProAlaAspSerAlaAspGly
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DB; AAM78810.
                                                                                SerValArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrLeu
                                                                                                               CCATCGATGGCATCAACCGGTGCATCCGGGACATCGAGCAG-GCCTCGCTGGCCGCCGTC
ACTTCGGTGGTCCAGGAAATCGGACACCTTATCGATCCCATCGCCACAGCGGCTCGGGGA
                                                        AGC - - - CAGAGCCTGGCCACGAGGGACGACGATCTCTGTGGAGGCCCTGCAGGAGCAGCTG
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Yang Y,
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2000US-0620325
2000US-0654936
2000US-0663551,
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2000US-0728422.
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, Wang J, Zhang J, Ren
Wejhrman T, Goodrich R
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37.55%
23.58%
5.91%
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Conservative:
Mismatches:
Indels:
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Ren F, Chen
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393 2092	374 AlaVaiSerGinLeuThrAsnLeuAiaGlySerAlaAlaVaiPheAiaGlyTrpThrThr	Qy db
373 2032	354 GlyValGlyLysLeuGlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAla 	Db Qy
353 1972	340 SerLeu	Qy Db
339 1912	320 LeuProLeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSer :::	Db Qy
319 1852	305 SerTyrSerGlyAlaAlaLeuAsnalaGlyLysArgMetAlaGly :::            ::     1793 CTCCAGGCCGGGAACAAAGGAACCCAGGCATGCATTACAGCCGCCACCGCTGTGTCTGGG	Db Oy
304 1792	286 AlaGinLeuSergluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLysSerAla :::	DP QA
285 1732	270GlnargGlyGlyalaLeuValLeuGlyLeuLysaspLysGluProLys	Qy Db
269 1672	254AsnalaGlyPheGlyAsnargLeuLeuSerValGlnSerArgAspHis	Db Db
253 1615	239 GlyAlaValAspLeuGlyValSerMetAlaGlyGlyLeuAlaAla 139 GlyAlaValAspLeuGlyValSerMetAlaGlyGlyLeuAlaAla 111	ОУ
238 1555	224ArgThrValleuAlaProAlaLeuAlaSerArgProAlaValGIn ::::::	Qy Db
223 1495	206 GlnValleuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaVal	P 69
205 1435	186 ASPATGLEUHISASPAlaMetAlaAlaSerValLySATGHISSETPTOSETLEUAlaArg	Qy Db
185 1375	166 ValGlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSerAlaSerPro :::::::::::::::::::::::::::::::::::	Qy
165 131β	148 LeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGln :::         :::	Db Oy
147 1258	128 AlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAlaPro	ОУ
127 1201	108 LysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeuArgAlaThrProPheAlaMet	Qy Db
107 1147	8 ArgLeuHisPheGluGlyGluThrProAlaThrIleAlaAspThrPheAlaLysAlaGlu :::       ::::  1103TATTTTGAGCCCTTGATCTTAGCCGCAGTTGGTGTGGCCTCCAAG	Qу Дъ
87 1102	68 GlnAlaAlaValAspValHisAsnAlaGlnIleThrAlaLeuIleGluThrArgAlaSer 	Фр

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25-APR-2000;
09-JUL-2000;
19-JUL-2000;
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14-SEP-2000;
19-OCT-2000;
29-NOV-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Human; nootropic; immunosuppressant; cytostatic; gene therapy; cancer; peripheral nervous system; neuropathy; central nervous system; CNS; Alzheimer's; Parkinson's disease; Huntington's disease; haemostatic; amyotrophic lateral sclerosis; Shy-Drager Syndrome; chemotactic; chemokinetic; thrombolytic; drug screening; arthritis; inflammation;
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                                                  Claim
                                                                                                Novel nucleic acids and such as central nervous
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  invention relates to
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Zhou P,
                                             SEQ ID NO 652; 10078pp; English.
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Xu C, Xue AJ,
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 GlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaVal-----
                                        GACGCCATTGCAGAAGCCATGAGCAAGCTGGATGAAGGCACTCCTCCAGAACCAAAGGGA 1505
                                                                                                              ATC - - - ATGGTGACGCTGAACGAAGCTGCCAGTGAAGTGGGGGCTGGTTGGGGGGCATGGTG
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                                                                          AspArgLeuHisAspAlaMetAlaAlaSerValLysArgHisSerProSerLeuAlaArg
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21-JAN-2000;
25-APR-2000;
09-JUL-2000;
                                                                                                                                                                   The invention relates to human nucleic acids (AAI57798-AAI61369) and the encoded polypeptides (AAM38642-AAM42213) with nootropic, immunosuppressant and cytostatic activity. The polypucleotides are useful in dene therapy. A composition containing a polypeptide or polynucleotide of the invention may be used to treat diseases of the peripheral nervous
Alzheimer's, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis, and Shy-Drager Syndrome. Other uses include the utilisation of the activities such as: Immune system suppression, Activin/inhibin activity, chemotactic/chemokinetic activity, haemostatic and thrombolytic activity, cancer diagnosis and therapy, drug screening, assays for receptor activity, arthritis and inflammation, leukaemias and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     peripheral nervous system; neuropathy; central nervous system; CNS;
Alzheimer's; Parkinson's disease; Huntington's disease; haemostatic;
amydtrophic lateral sclerosis; Shy-Drager Syndrome; chemotactic;
chemokinetic; thrombolytic; drug screening; arthritis; inflammation;
                                                                                                                                system, such as peripheral nervous injuries, peripheral neuropathy localised neuropathies and central nervous system diseases, such as
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                              GlyValGlyLysLeuGlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAla
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                                                            AACAGTGAGACCTTCGCAGACCACAGGGGAGAACATTCTCAAGACGGCCAAGGCCTTGGTA
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                                                                                                                                                                                                                          SerTyrSerGly--------AlaAlaLeuAsnAlaGlyLysArgMetAlaGly
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The invention relates to an isolated nucleic acid detection reagent capable of detecting 1000 or more genes from Drosophila. The invention useful in developmental biology and in elucidating cell signalling and cell-cell interactions in higher eukaryotes for the development of insecticides, therapeutics and pharmaceutical drugs. The invention discloses genomic DNA sequences (ABIL16176-ABIJ30511), expressed DNA sequences (ABIL16176-ABIJ30511), expressed DNA sequences (ABIL16176-ABIJ30511).
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11-JUL-2000;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 2466 BP; 659 A; 727 C; 740 G; 340 T; 0 other;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            22 SerAspAlaSerLeuAlaSerSerSerValArgSerValSerSerAspGlnGlnArgGlu
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                                                                                                                                                           GTCGGATTCTGGGATCTCGGAACTGGAGGCGGCGCGCTGAAGGATCGC---GATTCGGAGCT
                                                                                                                                                                                                                                                                                 TAACGAG---GACGCCCTGACCCTTGACCTCTTGAGCACGGCCAGCCACGACAGACCCGA 1073
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IleAlaAspThrPheAlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGly 118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGlnIle
rAlaArgAsn-----AlaValArgThrValLeuAlaProAlaLeuAlaSerArgProAl 236
                                ACGAGACGCAGCGTTTGCGGCTCTTCTACGAGGGTCAGCAGCGGGAGTGTCAACTGAAGC
                                                           gHisSerProSerLeuAlaArgGlnValLeuAspThrGlyValAlaValGlnThrTyrSe
                                                                                            CTCGTACCTGCGACAGGCCATGGAGCACAATGA-GAAAGACAAGGAGGTGTACTGGGAGC 1249
                                                                                                                           uHisTyrLeuSerAlaSerProAspArgLeuHisAspAlaMetAlaAlaSerValLysAr
                                                                                                                                                                                ------GlnValGlyThrLysMetMetAspArgAlaThrGlyAspLe 178
                                                                                                                                                                                                                                                ----LeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAsp------
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                                                                                                                                                                                                                                                                                                                                              CACTGACCTACGACACTTGGCCGCTCGACGACGAAATCATCGCCTGCTGCAGCGTTGCAG 1016
                                                                                                                                                                                                                                                                                                                                                                           aSerLeuLeuGlnTyr------MetGlnProAlaIl 138
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ycolatopsis mediterran	24+JUL-1998 (first entry)	AAV21187;	LT 15 1187 AAV21187 standard; DNA; 53789 BP.	2057 CATCCGCATCACCAACAGCAGTA 2079	472 hrAlaAlaSerProSerGluIle 479	09 TGGACAATCTAAACGAGATTTGCCAGAAGACACGAAAGTACACAACA	54 alAsnAsnLeuArqGlnArqProAlaArqGluAlaAspIleGluGluGlyGlyT 4	442 lalleThrHisThrGlyAlaSerLeuArgAsnThrV 454	1894ATTGGAGCTCTGACCAGCGAGCTGGCCAAGTTGCGCAAGGAGCTCTCCGATCTGG 1948	422 lyTyrValAlaAspGlnThrValLysLeuAlaLysThrValLysAspMetGlyGlyGluA 442	402 llyslysAlaGluSerPhe-IleGlnAspThrValLysSerThrAlaSerSerThrThrG 422 ::: ::::::            1859 AACTGCAGAAGATCATCACGCTGAAGGATCAGGTG	179 AACAACAGCAGCAGCAGCAGCAGCAGCAGCAACACACAC	cAlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuTh	362 aThrLysAsnIleThrAspProAlaThrLysAlaAlaValSerGlnLeuThrAsnLeuAl 382	1737GC 1738	342 rGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeuGlnGluMetAl 362	322 uAspMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSerLeuTh 342	0 AGCAGCAGGCGAAAGAGGAGCAGCAGCAGCAGCATCCAGAGTTGCAGCA 17	2 sSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLe 32	0 GCAGCAGCAACAGCAACAACAACAACAAACACAAACACAAAGCCAAAGCCAACCAAACAAACAAACAAAGCAAAGCAAAGCAAACAAACAAAGCAAAGCAAAGCAAACAAACAAAGCAAAAGCAAAAAGCAAAAAGCAAAAAGCAAAAAGCAAAAAGCAAAAAGCAAAAAGCAAAAAGCAAAAAGCAAAAAA	AGCAG	75LeuValLeuGlyLeuLysAspLysGluProLysAlaGlnLeuSerGluGluAsnAs 293	:::::: O TCTGCGAGCGCAACGGGGAGATAGCTTTACTCAAGA	SerArgAspHisGlnArgGlyGlyAl	1430 AGGGGTGCAACAGCAGGTGGACGACTGCGTCACCAGCTGGAGGACAGCGAGTGGCGCG 1489	243 uGlyValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeuSe 263		0	

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The present sequence represents a Amycolatopsis mediterranei rifamycin synthesis gene cluster DNA fragment from the present invention. The DNA fragment comprises a DNA region involved directly or indirectly in the gene cluster responsible for rifamycin synthesis, including the adjacent DNA regions to the right and left which, by reason of their function in connection with rifamycin biosynthesis, qualify as constituents of this rifamycin gene cluster, and functional fragments, derivatives or constituents of these. The Amycolatopsis
                           mediterranei rifamycin synthesis gene cluster DNA fragment can be used for producing rifamycin, rifamycin analogues or precursors. It can also be used for inactivating or modifying genes involved in ansamycin or rifamycin biosynthesis. The DNA can be used for constructing mutant actinomycetes strains from which the natural rifamycin or ansamycin biosynthesis gene cluster has been partly or completely deleted. The DNA fragment can be used for assembling a library of polyketides. A hybridisation probe of the invention can be used for identifying DNA fragments involved in the biosynthesis of ansamycins.
Sequence 53789 BP; 6707 A; 19183 C; 20504 G; 7395 T; 0 other;
                                                                                                                                                                                                                                                                                                                 Claim 4; Page 53-102; 205pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                      Engel N,
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                                                                                                                                                                                                                                                                                                                                           Amycolatopsis mediterranei rifamycin synthesis gene cluster - used to produce rifamycin and rifamycin analogues
                                                                                                                                                                                                                                                                                                                                                                                           P-PSDB; AAW52845-W52850.
                                                                                                                                                                                                                                                                                                                                                                                                         WPI; 1998-169172/15
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Amycolatopsis mediterranei; rifamycin; synthesis; gene cluster; polyketide synthase; actinomycete; ansamycin; ds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (NOVS ) NOVARTIS
                                                                                                                                                                                                                                                                                                                                                                                                                                     Schupp T,
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/product= "polyketide synthase"
51713..5293
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'product = "polyketide synthase"
1373..51614
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product= "polyketide synthase"
0895..36060
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product- "polyketide synthase"
5259..41325
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Alignment Scores:

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254 34998	234 34960	214 34906	194 34846	174 34792	154 34777	137 34738	119 34678	113 34618	102 34558	86 34519	80 34459	65 34399	51 34351	31 34291	11 34264	9-825-	. No. e: ent s Loca y Mat
AsnAlaGlyPheGlyAsnArgLeuLeuSerValGlnSerArgAspHisGlnAr 	ArgProAlaValGlnGlyAlaValAspLeuGlyValSerMetAlaGlyGlyLeuAlaAl 	ValGlnThrTyr:	AlaSerValLysArgH1sSerProSerLeuAlaArgGlnValLeuAspThrGlyValA1 	AlaThrGlyAspLeuHisTyrLeuSerAlaSerProAspArgLeuHisAspAlaMetAl 	<pre>! LeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAs         : : :                   CTGGTCTCCGGCGCC</pre>	7 AlaIleAsnLysGlyAspTrpLeuProAlaProLeuLysProLeuThr 	AlaLeuArgAlaThrProPheAlaMetAlaSerLeuLeuGlnTyrMetG                      :::::     :::   CAGCTCGCGCTGCGCACGACGTTCTCGGTGCCCCGGCTCGCCCGCGTCACCG			AlaSerArgLeuHisPheGluGlyGluThrProA	AlaLeuIleGluThrAr 	5AlaaspGlyGlnAlaalaValaspValHisAsnAlaGlnIl	AsphisValPheAlaAlaHisLysLeuProProAlaAspSer	ValArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrL:::       :::        :::	ProValThrAlaThrAspSerPheArgThrAlaSerAspAlaSerLeuAlaSerSe         CCGGTCCTCACCATGGACTCGCTG		11.7 Length: 53789 141.00 Matches: 141 34.29% Conservative: 63 11 Similarity: 23.70% Mismatches: 192 5.85% Indels: 200 19 Gaps: 29
nArg :    GCGC	aAla     CGCT	.aSer : :CGAC	LALa LILI CGCC	tAla ; cccc	pArg	GGTC	InPro ::    AACCG	AGCCG	GTTC	TCCG	rArg []]	eThr :	TCGG	euThr GGGTG	rSer -ATC		
271 35048	253 34997	233 34959	213 34905	193 34845			136 34737	118 34677	112 34617	101 34557	85 34518	79 34458	64 34398	50 34350	30 34290		

272	GlyGlyAlaLeuValLeuGlyLeuLysAspLysGluProLys 285
35049	GCTGACCCGGGAGCGGCCTGGCCAAGGTGTTCGCGGCCCAAGGTCGACGCGGCCAACCACCT 35108
286	Ala-GlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLysSerAlaSe 305
35109	CGACGAGCTGACCCGCGACCTGGACCTCGACGCGTTCATCGTCTACTCGTCCGCCTC 35165
305	rAl 310
35166	CTCGATCTTCATGGGCGGGGGAGCGGCGGGGGGAGCGCCTACCTCGACGG 35225
310	aLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAspMetAla 325
35226	CCTGATGGCCGCCCGGCGCGGGCCTGCCGGGGCTGTCGCCTGGGGGCCCGTG 35285
325	325
35286	GGAGCAGCTCACCGGCATGGCCGACACCATCGACGACCTCACCCTGGCCCGGATGAGCCG 35345
326	-ThraspalametGlyalavalargSerLeuValSeralaSerSerLeuThrGlnasnGl 345
35346	GCGCGAAGGCCGCGCGCGCGCCTCGGCCTCCGCCGACGGCATGGAGCTGTTCGA 35405
345	yLeuAlaGeuAlaGlyGly 351
35406	CGCCGCGCTCGCCGGCCAGGCGCTGCTGCTGCTGCCGATCGAGCTCGACCTGCGCGAGGT 35465
352	PheAlaGlyValGlyLysLeuGlnGluMetAlaThrLysAsnIleThrAs 368
35466	GCGGGCCGACGCGGCGCGCGCGCGCGCCTGCTGCGCGGGCTGGTCCG 35522
368	pProAlaThrLysAlaAlaValSerGlnLeuThrAsnLeuAlaGlySerAlaAlaValPh 388
35523	CGCGGGCCGGCAGGGCGGCGGCCACCGAGGACGGCGGCCTGGGAACGCCGGCT 35582
388	eAlaGlyTrpThrThrAlaAlaLeuThrThrAspProAlaValLysLysAlaGluSerPh 408
35583	GGCCGGGCTCACCGTGGCC
408	eIleGlnAspThrValLysSerThrAlaSerSerThrThrGlyTyrValAlaAspGlnTh 428
35616	GCTGCTCGACCTCGTCCGCGGTCAGGTCGCCGTCGTGCTCGGGCACGCCGACAGCTCCGG 35675
428	rValLysLeuAlaLysThrValLysAspMetGlyGlyGluAlaIleThrHisThrGlyAl 448
35676	CGTCCGCGCCGACGCGCGTTCAAGGACGCCGGGTTCGACTCGCTGACGTCGGT 35729
448	aSerLeuArgAsnThrValAsnAsnLeuArgGlnArgProAlaArgGluAlaAspIle 467
35730	GGAGCTGCGCAACCGGCTGCGCGAGACGACCGCCTGAAACTGCCCCGCGACGCTGTCTT 35789
468	GluGluGlyGlyThrAlaAlaSerProSer 477
35790	CGACCATCCGAACCCGCTGGCACTGGCCCCGCACCTGCG 35828
rch co time	Job time : 3263.75 secs
	35049 35049 36109 305 35166 35166 310 35226 35226 35286 35346 353466 35523 35466 35523 35466 35523 35466 35523 35523 368 35523 375266 35790 468

Search completed: January 31, 2003, 05:29:09
Job time : 3263.75 secs

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-q-/cgn2_1/USPY0_spc01/US09823414/runat_28012003_161742_26093/app_query.fasta_1.1294
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-DB-EST -QFMT-fastap -SUFFIX-p2n.rst -MINMATCH-0.1 -LOOPCL-0 -LOOPEXT-0
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-DOCALIGN-200 -THR_SCORE-pct -THR_MAX=100 -TRR_MIN-0 -ALIGN-15 -MODE-LOCAL
-OUTFMT-pco -NORM-ext -HEAPSIZE-500 -MIXLEN-0 -MAXILEN-200000000
-USER-US09825414_@CGN_11_2221_@runat_28012003_161742_26093 -NCPU-6 -ICPU-3
-NO_MARP -LARGGQUERY -NEG_SCORES-0 -WAIT -LONGLOG -DEV_TIMEOUT-120
-WARN_TIMEOUT-30 -THREADS-1 -KGAPOP-10 -XGAPEXT-7
-YGAPEP-10 -YGAPEXT-0.5 -DELOP-6 -DELEXT-7
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Ygapop 10.0 , Ygapext
Ygapop 6.0 , Fgapext
Fgapop 6.0 , Delext
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                  em_gss_mus:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No. 1	126.5 126.5 126.5 125.5 115.5 115.5 110.5	Maren	Length 1138 1753 4001 2191 2191 2191 2191 2191 2191 2191 2	1311111735547551114477533911117571117	ID  CNS06QE0 BC018800 AK014542 AQ012154 BG389810 AY103948 BC021514 AY107104 AX1077104 AL545051 BM044579 BM044579 BM0428977 BM022679 BC020083 BI725871 BM042670 CNS07928 BM042670 CNS07928 BM042670 CNS07928 BM055543 BM557363 BM554853 CNS07928 BM557363 BM557363 BM554853 CNS07928
22221165 222210987 232210987	113.5 1113.5 1112.5 1110.5 110.5 110.5 110.5 110.5 110.5 110.5 110.5 10.5		1193 2012 2012 2012 9918 948 888 886 867 670 2347 1125 1235 13264 1038 1038		5500004507725075555555555555555555555555
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## ALIGNMENTS

RESULT 1

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(NS06QED

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No.:
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                                                                                                                                                                                                                                                                     1052 CATGCTGCAGCACCACCACTYTTCCACATCGCCGCCCATGTACCACAAACAGCAGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      source
902 TCAGGGTCCTCATCCCGGCCACCAGGGCCACCCAGGACACCCTGGCCATCAGGGTCA---
                                                                                   950 CATGTCCCCCCAGGGTCATCC------CAATATGTCTCCTCACCCGGTGCAGCA 903
                                                                                                                                                                                992
                                                                                                                                                                                                                       101 AspThrPheAlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeu 120
                                       140 LysGlyAspTrpLeuProAlaProLeuLysProLeuThrProLeuIleSerGlyAlaLeu 159
                                                                                                                                                                                                                                                                                                                                                                                  61 ProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGlnIleThrAla 80
                                                                                                                                                                                                                                                                                                             81 LeuIleGluThrArgAlaSerArgLeuHisPheGluGlyGluThrProAlaThrIleAla 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Direct Submission

Submitted (07-SEP-2000) Genoscope - Centre National de Sequencage,
2 rue Gaston Cremieux, CP 5706, 91057 EVRY cedex, FRANCE. (E-mail:
seqref@genoscope.cns.fr - Web: www.genoscope.cns.fr)
This GSS is part of a random genomic sequencing program of thirteen
yeast species: Saccharomyces bayanus var. uvarum, Saccharomyces
exiguus, Saccharomyces servazzii, Zygosaccharomyces rouxii,
Saccharomyces kluyveri, Kluyveromyces thermotolerans, Kluyveromyces
lactis var. lactis, Kluyveromyces marxianus var. marxianus, Pichia
angusta, Debaryomyces hansenii var. hansenii, Pichia sorbitophila,
Candida tropicalis and Yarrowia lipolytica. Genomic inserts of 3 to
5 kb were prepared and both extremities were sequenced. See
keywords for description of this sequence and for the sequence of
Location/Qualifiers

1 118
                                                                                                                               ArgAlaThrProPheAlaMetAlaSerLeuLeuGlnTyrMet----GlnProAlaIleAsn 139
                                                                                                                                                                                CCATCCCCAGCATCAACACCC--
                                                                                                                                                                                                                                                                                                                                                         CCAGCATCATCCGCATCCACACCACTCGCC------GCAGAACTCACYTCC
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FEBS Lett.
20584727
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   de-Montigny,J., Dujon,B., Durrens,P., Lepingle,A., Llorente,B., Malpertuy,A., Neuveglise,C., Ozier-Kalogeropoulos,O., Potier,S., Saurin,W., Tekaia,F., Toffano-Nioche,C., Wesolowski-Louvel,M., Wincker,P. and Weissenbach,J. Genomic exploration of the hemiascomycetous yeasts: 1. A set of yeast species for molecular evolution studies FEBS Lett. 487 (1), 3-12 (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Casaregola, S., Neuveglise, C., Lepingle, A., Bon, E., Feynerol, C., Artiguenave, F., Wincker, P. and Gaillardin, C. Genomic exploration of the hemiascomycetous yeasts: 17. Yarrowia
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /organism="Yarrowia lipolytica"
/strain="CLIB 89"
/db_xref="taxon:4952"
/clone="AWQAA005C02"
/clone_lib="AWQAA"
/note="end : T3"
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DH C	Db	Qγ	ρb	Qy	ДЬ	γQ	ф	Qy	Db	Qy	Дb	Ωу	Db	Ωу	Db	Qy	ф	Qy	Db	Qy	Db	Qy	фa	Qy	Дb	γQ	Db	Qy	ф	Qy	Дb	Qy	рb	Qy
RESULT 2 BC018800 LOCUS DEFINITI	14	46	) 17	44	) 21	42	27	410	33	, 39	) 39	, 37	39	35		33	512	, 31	54			, 27	62	25	68	23	71	. 21	, 76	, 19	78	, 17	84	16
ION 2	0		79		ω_		-ω		-10	-0-	N	0	<del>-</del>	-0-	-10	0		-0-	- <del>6</del> -	-	<del>- 00</del>	-0-	ω	-ω-	w	-ω-	-0-	<u> </u>	<u> </u>	<u> </u>	-01		<u>.</u>	
BC018800 N Homo sapiens, clone IMAGE:3605889, mRNA.	TGCCAAGCAGCTTG	-	CAGCGAGAGAAGGACAGGGAGATTAGGGAAAAATGC	ArgProAlaArgGlu	GCCCCCAAGCCAAAGACGAAGAAACAGCTCCAGGCAGAG		TCTAAGACGTCAGCTGCTTCTGTCGCAGCGGGAACCTCCTAAGGAGGCTTCCCC	GlnAspThrValLysSerThrAlaSerSerThrThrGlyTyrValAlaAspGln	GCAACAACTTCTTCTGTGTCCACTCCGAAGGCAAAGAAGCAAGCAAGGCCGTA	GlyTrpThrThrAlaAlaLeuThrThrAspProAlaValLysLysAlaGluSerPheI	TCCACATCGTCAGCACCAGCGTCAGCTTCCTCTGCTGCAGGCGCTGCCGCCGCTGCCGC	aThrLysAlaAlaValSerG		${\tt GlyGlyPheAlaGlyValGlyLysLeuGlnGluMetAlaThrLysAsnIleThrAspPr}$	GGCGCACATACATCGGCCAGTCCTGCTGCATCGTCATCATCAGCAGCCCCAGTGTC	lyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAs	CAAAAGGAGGCGATTGTGCGTGTGGCGTTTGTGGAGTACGAGGAGGGTGGTGGCCTGGCC	AlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAspMetAlaThrAspAlaMe	TACGCAGCCGTTAAGCAAAGCGCTAAGACGTCCCTG	GluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAl	GAAAAACCAAGGCGTACACAAACGCAGCCCG	lnArgGlyGlyAlaLeuVal	GCAGCTGGAAGAGTTGCGAGACAAGGTCGTGATTGATGAATACAC	AlaAsnAlaGlyPheGlyAsnArgLeuLeuSerValGlnSerArgAspHi	ATACGCAGACGCCAAGACGGGATTTCTACAGCAGGTCCAGAGCCGGCTGGAGGCCGTGGT	SerArgProAlaValGlnGlyAlaValAspLeuGlyValSerMetAlaGlyGlyLeuAla	ACCACCCGCGGATGCAGATGATCCCGC	AlaValGlnThrTyrSerAlaArgAsnAlaValArgThrValLeuAlaProAlaLeuAla	TCCCATTCAGGGTCACACGTCTGTTGACGGCGATCACTCTGCACCGGAGTC	SerValLysArgHisSerProSerLeuAlaArgClnValLeuAspThrGlyVa	GCAGGCTCGTGGCCTATCCAGAT	ThrGlyAspLeuHisTyrLeuSerAlaSerProAspArgLeuHisAspAlaMetAlaAl	CATGTCGCAGCAGC	-
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DEC-2			41	67	.80	147	219	27	279	409	33	89	93	69	93	349	53	29	13	309	49	89	79	69	24	52	84	32	11	212	62	94	98	174
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                                                         339 GAGTCGGGCCTGCGCGCCACTTTGAGGCCTTTGGGACTCTGACGGACTGCGTGGTGGTG 398
                                                                                                                                        279 GAGATGGAGAATTCTCAGTTGTGTAAGCTGTTCATCGGCGGCCTCAATGTGCAGACGAGT 338
                                                                                                                                                                              72 AspValHisAsnAlaGlnIleThrAlaLeu------IleGluThrArg
                                                                                                  86 AlaSerArgLeuHisPheGluGlyGluThrProAlaThrIleAlaAsp------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Steven Jones, Jennifer Asano, Ian Bosdet, Yaron Butterfield, Susanna Chan, Readman Chiu, Chris Fjell, Erin Garland, Ran Guin, Letticia Haiao, Martin Krzywinski, Reta Kutsche, Oliver Lee, Soo Sen Lee, Victor Ling, Carrie Mathewson, Candice McLeavy, Steven Ness, Pawan Pandoh, Anna-Liisa Prabhu, Parvaneh Saeedi, Jacqueline Schein, Duane Smailus, Michael Smith, Lorraine Spence, Jeff Stott, Michael Thorne, Miranada Tsai, Natasja van den Bosch, Jill Vardy, George Yang, Scott Zuyderduyn, Marco Marra.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NIH-MGC Project URL: http://mgc.nci.nih.gov
Contact: MGC help desk
Email: cyapbs-remail.nih.gov
Tissue Procurement: ATCC
CDNA Library Preparation: Rubin Laboratory
cDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL)
DNA Sequencing by: Genome Sequence Centre,
BC Cancer Agency, Vancouver, BC, Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Clone distribution: MGC clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at: http://image.llnl.gov Series: IRAL Plate: 23 Row: n Column: 9
This clone has the following problem: no cloning site /
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Direct Submission
Submitted (07-DEC-2001) National Institutes of Health, Mammalian Gene Collection (MGC), Cancer Genomics Office, National Cancer Institute, 31 Center Drive, Room 11A03, Bethesda, MD 20892-2590,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            microdeletion
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1 (bases 1 to 1753)
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BC018800.1 GI:17402947
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /organism="Homo sapiens"
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/clone_lib="NIH_MGC_44"
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/note="Vector: pOTB7"
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                                                                                                                                                                                                                   Adachi, J., Aliawa, K., Akahira, S., Akimura, T., Aono, H., Arai, A., Arakwa, T., Baldarelli, R., Bono, H., Brownstein, M., Bult, C., Carninci, P., Fukuda, S., Fukunishi, Y., Furuno, M., Hanagaki, T., Haraka, A., Hayatsu, N., Hill, D., Hiramoto, K., Hiraoka, T., Hori, F., Hume, D., Imotani, K., Ishii, Y., Itoh, M., Izawa, M., Kasukawa, T., Kato, H., Kowai, J., Kojima, Y., Konno, H., Kouda, M., Koya, S., Kurihara, C., Matsuyama, T., Miyazaki, A., Nishi, K., Nomura, K., Numazaki, R., Ohno, M., Okazaki, Y., Okido, T., Owa, C., Quackenbush, J., Salto, H., Salto, R., Sakai, C., Sakai, K., Sano, H., Sasaki, D., Salto, R., Sakai, C., Sakai, K., Sano, H., Sasaki, D., Saki, C., Sakai, K., Sano, H., Sasaki, T., Chiraka, 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Shibata, K., Itoh, M., Aizawa, K., Nagaoka, S., Sasaki, N., Carninci, P. Konno, H., Akiyama, J., Nishi, K., Kitsunai, T., Tashiro, H., Itoh, M., Sumi, N., Ishii, Y., Nakamura, S., Hazama, M., Nishine, T., Harada, A., Yamamoto, R., Matsumoto, H., Sakaguchi, S., Ikegami, T., Kashiwagi, K., Yamamoto, R., Matsumoto, H., Sakaguchi, S., Ikegami, T., Kashiwagi, K., Yoneda, Y., Inoue, K., Togawa, Y., Izawa, M., Ohara, E., Watahiki, M., Yoneda, Y., Ishikawa, T., Ozawa, K., Tanaka, T., Matsuura, S., Kawai, J., Okazaki, Y., Muramatsu, M., Inoue, Y., Kira, A. and Hayashizaki, Y., Okazaki, Y., Muramatsu, M., Inoue, Y., Kira, A. and Hayashizaki, Y., Okazaki, Y., Muramatsu, M., Inoue, Y., Kira, A. and Hayashizaki, Y., RIKEN integrated sequence analysis (RISA) system - 384 format sequencing pipeline with 384 multicapillary sequencer
                                                   Schriml,L., Shibata,K., Shibata,Y., Shinagawa,A., Shiraki,T., Sogabe,Y., Suzuki,H., Tagami,M., Tagawa,A., Takahashi,F., Tanaka,T., Tejima,Y., Toya,T., Yamamura,T., Yamanaka,I.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ring,B., Ringwald,M., Rodriguez,I., Sakamoto,N., Sasaki,H., Sato,K., Schonbach,C., Seya,T., Shibata,Y., Chorb,K.F., Suzuki,H., Toyo-oka,K., Wang,K.H., Weitz,C., Whittaker,C., Whining,L., Whynshaw-Boris,A., Yoshida,K., Hasegawa,Y., Kawaji,H., Kohtsuki,S.
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Kuehl,P., Lewis,S., Matsuo,Y., Nikaido,I., Pesole,G.,
Quackenbush,J., Schriml,L.M., Staubli,F., Suzuki,R., Tomita,M.,
Wagner,L., Washio,T., Sakai,K., Okido,T., Furuno,M., Aono,H.,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Carninci,P. and Hayashizaki,Y.
High-efficiency full-length cDNA cloning
Meth. Enzymol. 303, 19-44 (1999)
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Eutheria;
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            Yoshino, M., Muramatsu, M. and
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Submitted (10-JUL-2000) voshihide Hayashizaki, The Institute of Physical and Chemical Research (RIKEN), Laboratory for Genome Exploration Research Group, RIXEN Gemomic Sciences Center (GSC), RIXEN Yokohama Institute; 1-7-22 Suehiro-cho, Tsurumi-ku, Yokohama, Kanagawa 230-0045, Japan (E-mail:genome-res@gsc.riken.go.jp, URL:http://genome.gsc.riken.go.jp/, Tel:81-45-503-9222, Fax:81-45-503-9216)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Hayashizaki,Y.
Direct Submission
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AELEEGRKQKQKALVDNEQLHELAQLKALQLLGARNQGLREEARAKSATEARYSKL
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GlnLeuSerGl ::: ACCTCGGCAGC	rgAspHis    GGCAAGAC	MetAlaGlyGl ::: TTG	ProAlaLeuAla      AGGGCTCAGCCC	GAGTGTGGAGCC	CCGCCACC	alAlaVal	MetAlaAlaSe :::    :: CTGGTGGCAGC	AspargalaThrGly?     GGCCTGGAGCAGGGCC	hrProLeulle    ::: CCAGACTACTT		AlaThrThrThrSerG      CGGTGTTGCGAAGTG	leAlaAspThr ::   ::: rGGCAGAAAAG	hrAlaLeuIleGluThrArgA        ::: :::  AGGCACTTAGCCAAGAGCAGC	uProProAla	ArgGluIle	ArgThrAlaSer         GCACAGAACAG	4-7 (1-486	ilarity: Similarity: :
uGluAsnAspTr     CATTGAGGACGC	GlnArgGlyGlyAl :::      GAGCTAGGG	lyLeuAlaAlaAs	SerAr     	CGGCTCTG	ACCTGGC	õ	laSerValLysArgHisSerF   ::::::      AGCGCTGACCCGCTTCTCC-	.spArgAlaThrGlyAspLeuHisTyrLeuSerAl     	SerGlyAlaLeu GGTGAGCCGGGC	MetGlnProAlaIleAsnLySGlyAspT :::      :::::       CTACAGGATGCAGTGAGCAAGCTGGACG	SerGlyAlaLeu      AGTGCAGCCGCC	PheAlaLysAla :::::: GAGTCTCAGGAG	GluThrArgAlas ::: CAAGAGCAGCAGC	As	AsnalaIleAlaAsp     :::::  GCTCTGAGTGG/	AspAlaSerLeuA      AGTGGGTCAGAGC	) x AK014542	125.50 33.81% 21.11% 5.20%
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alleLysSerAlaSer :::     ::: CATGATGAGCCAGGCCCG	LeuLysaspLysGluProLysal :::           ATGGTGGACAAGGAGATGGCGGC	ArgLeuLeuSerValGlnSe :::    ::: AAGCCTAAGAGCCTGGATGT	aValAspLeuGlyValSe :::        TCTGCAGTTGGGCCAGGA	ArgThrvalLedAl :::          :AAGACCAGACAGTGCTACC	CCTGATGGACACATGCAG		<pre>urgGlnValLeuAspThrGl :::    :CGGACACCATTGTCAATGG</pre>	roAspArgLeuHisAspAl      AAGATGCTTCTGC	nValGlyThrLysMetMe     CGTGAGC	ProLeuLysProLeu         CTCCGCTGCACCAGCTC	MetAlaSerLeuLeuGln	AspArgLeu  :-::::    	31yGluThrProAlaThr        GCGAGCTACGGGGGCAG	ValHisAsnAlaGlnIle ::: CTGGTGCGGGAGAAGGAG	ValPheAlaAlaHisLys	;SerValSerSerAspGln ::::::::::::::::::::::::::::::::::::		118 71 70 208 163 21
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	Fax: 713 500 5499 Email: madhu@utmmg.med.uth.tmc.edu Seq primer: pBluescript T7		
	fannin Street, Houston, 713 500 5437		
	Contact: Choudhary, M.  Department of Microbiology and Mo	COMMENT	8
		TITLE JOURNAL	
M. and Kaplan	Rhodobacteraceae; Rhodobacter.  1 (bases 1 to 2191) Choudhary,M., Mackenzie,C., Mouncey,N., Weinstock,G.	FERENCE AUTHORS	RE
bacterales;	Rhodobacter sphaeroides. M Rhodobacter sphaeroides Bacteria; Proteobacteria; Alphaproteobacteria; Rhodo	SOURCE	SO
	AQ012154 AQ012154.1 GI:3177109 GSS	RSION	ACCE: VERS
r GSS 04-JUN-1998 Rhodobacter sequence.	AQ012154 2191 bp DNA linea: 8758P1D037011098 Cosmid library of chromosome II sphaeroides genomic clone 8758P1D037011098, DNA;	RESULT 4 AQ012154/c LOCUS DEFINITION	RES AQO LOC DEF
c 3191	CTATGTACTGGCTGGGGGATGGGAACACCTAGCGAAGAAGAACCCAGCAGACCC	3137	В
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GGATTT 3016	CGTCGTGGCCTCCACCAAATCTGGCCAGGAGCAGATTGAGGACAGAGACACCATGG	2957	Db
446	uAlaIleThrHisThr	441	Qγ
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yGlyGl 441	LeuAlaLysThrValLysAspMetGl	431	Qγ
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430	-SerThrAlaSerSerThrThrGlyTyrValAlaAspGlnThrValLys	415	γQ
TGCTCCCA 2836	GTCAGCTGACAAGGTTGTGCTTCACATGGGCAAATACGAGGAACTCATCGTCTG	2777	Db
414	SLysAlaGluSerPheIleGlnAspThrValLys	403	Qγ
-GTGGA 2776	CTCAGCCTCTAAGGCAGTGGGGCTGGGGAGCCACACAGCTG	2732	밁
	ThrThrAspP	383	Qy
CCTCAT 2731	CAAGAATTCACGGTGGACTGAAGGCCTC	2702	밁
uAlaGl 383	ysAsnIleThrAspProAlaThrLysAlaAlaValSerGlnLeuT	363	Qγ
TTATGC 2701		2648	밁
tAlaTh 363		343	Qy
CCTGCA 2647	CTCCTGCACAGACCTGATGAAGGCTATCCGGCTCCTGGTGATGACCTCCACCAGCCTGCA	2588	g
erLeuThrGl 343	p MetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaValArgSerLeuValSerAlaSerSerLeuPalametGlyAlaWalArgSerLeuValSerAlaSerSerLeuPalametGlyAlaWalArgSerLeuValSerAlaSerSerLeuPalametGlyAlaWalArgSerLeuValSerAlaSerSerLeuPalametGlyAlaWalArgSerLeuValSerAlaSerSerLeuPalametGlyAlaWalArgSerLeuValSerAlaSerAlaSerSerLeuPalametGlyAlaWalArgSerLeuValSerAlaSerAlaMetGlyAlaWalArgSerLeuValSerAlaWalArgSerAlaWalArg	323	Qy
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                                                                                                                                                                                          GlyAlaAlaLeuAsn-AlaGlyLysArgMetAlaGlyLeuProLeuAspMet------
                                                                                                                                                                                                                                               LeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLysSerAlaSerTyrSer 307
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                                                                       rGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeuGlnGluMetAl
                                                                                                                                                                    GGAGAGGCGCTCCGCTTCCATGAAGAAGATCGCGGAACATATTCTCGTCATGCAGGAAAT 1146
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/strain="2.4.1T"
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	FEATURES SOUT	COMMENT	AUTHORS TITLE JOURNAL	VERSION KEYWORDS SOURCE ORGANIS	RESULT 5 BG369810 LOCUS DEFINITIO ACCESSION	Qy 462 Db 809		Qy 442		Db 934	Qy 402	Db 986	0у 382	Db 1028
/Cultivar="Morex" //db_xref="taxon:4513" //clone="HysKni51026C02f" /clone="HysKni51026C02f" /clone="HysKni51026C02f" /clone="HysKni51026C02f" /clone="HysKni51026C02f" /clone="HysKni51026C02f" /clone="Solr" /ruse="20 LAP spike" /lab_host="20 LAP spike" /lab_host="20 LAP spike" /lab_host="30LR" /note="%ector: lambdaZAP; Site_1: EcoR1; Site_2: Xho1; /note="%ector: lambdaZAP; Site_1: EcoR1; Site_2: Xho1; /lab_host="30LR" /lab_host=		On Mar 8, 2001 this sequence version replaced g1:13258911. Contact: Wing RA Clemson University Genomics Institute Clemson University	Wing,R., Close,Y., Henry,D., ,Y., Henry,D., ,R.D., Close,S Development of for barley gen Unpublished (2		)/C BG369810 883 bp mRNA linear EST 22-OCT-2001 ON HVSME10026C02f Hordeum vulgare 20 DAP spike EST library HVcDNA0010 (20 DAP) Hordeum vulgare cDNA clone HVSME10026C02f, mRNA sequence.	laArgGluAlaAspIleGluGluGlyGlyThrAlaAlaSerProSerGlu 478	ccccrccgracccgrrcgarcaccccrccacacaccrcaccagcaagca	ender istar en	rValAlaAspGlnThrValLysLeuAlaLysThrValLysAspMetGlyGlyGluAl	ATCGAACTCACCTCCACGCTCGCGACC 908	LysSerThrAlaS		Phe	CCAGGACGCGGCCAAGGAAGTCTCGACCCTCTCCCACTCGAC 987

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US-09-825-414-7 (1-486) x BG369810 (1-883)
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                                                  ACTTCGACTGTCGACGGCCGGCTCGACAATCTCCACTGCTGCCACCGTAGCCTCCTCG
                                                                                    AspGlnThrValLysLeuAla-----
                                                                                                                                             TCCTCCTTCACGGCCTCCTCGGCAGCAGCAACGGCCGGCTCGACAGCATCAGCCGTTGCC
                                                                                                                                                                                    GluSerPheIleGlnAspThrValLysSerThrAlaSerSerThrThrGlyTyrValAla
                                                                                                                                                                                                                                    ThrThrAspProAlaValLys-----
                                                                                                                                                                                                                                                                                                                             GTGACAGGGGCCTCCTCAGCGGCGGCGGCCGGCTGGACAACCTCTGTCTCGGCCTCATTG
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Genetically and physically anchored EST resources for barley genomics. Barley Genetics Newsletter 31:29-30. (http://wheat.pw.usda.gov/gpagges/bgn/31/cover.html)"
a 264 c 301 g 113 t
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                                                               LeuHisPheGluGlyGluThrProAlaThrIleAlaAspThrPheAlaLysAlaGluLys 108
                                                                                               GCAGCCATACAAAAAAAAAGAGCTCAAATGCAGAGCCTAATTACCAACATG-----
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Spermatophyta; Magnoliophyta; Liliopsida;
clade; Panicoldeae; Andropogoneae; Zea.
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Direct Submission
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                                                                                                                                                                                                                                                                                                                                                                    /note-"this sequence is part of a project of EST assemblies resulting from the application of public contigs to seed DuPont contigs; this resource was assembled by DuPont as part of a collaboration for the overgo addressing of BACs in conjunction with the Maize
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/db_xref="MaizeDB:637267"
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/clone="PCO124731"
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                            ThrGlyAlaSer---LeuArgAsnThrValAsnAsnLeuArgGlnArgProAlaArgGlu 464
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                                                                                        Similarity:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Akhter, N., Ayele, K., Beckström-Sternberg, S.M., Benjamin, B., Blakesley, R.W., Bouffard, G.G., Breen, K., Brinkley, C., Brocks, S., Dietrich, N.L., Granite, S., Guan, X., Gupta, J., Haghighi, P., Hansen, W., Ho, S.-L., Karlins, E., Kwong, P., Laric, P., Legaspi, R., Maduro, Q.L., Masiello, C., Maskeri, B., Mastrian, S.D., McCloskey, J.C., McDowell, J., Pearson, R., Stantripop, S., Thomas, P.J., Touchman, J.W., Tsurgeon, C., Vogt, J.L., Walker, M.A., Wetherby, K.D., Wiggins, L., Young, A., Zhang, L.-H. and Green, E.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Clone distribution: MGC clone distribution information can through the I.M.A.G.E. Consortium/LLML at: http://image.lln Series: IRAK Plate: 55 Row: i Column: 23
This clone was selected for full length sequencing because passed the following selection criteria: matched mRNA gi: 6
This clone has the following problem: frame shifted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cDNA Library Preparation: Life Technologies, Inc. cDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL) DNA Sequencing by: National Institutes of Health Intramural
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Submitted (14-JAN-2002) National Institutes of Her
Gene Collection (MGC), Cancer Genomics Office, Na-
Institute, 31 Center Drive, Room 11A03, Bethesda,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Web site: http://www.nisc.nih.gov/
Contact: nisc_mgc@nhgri.nih.gov
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaithersburg, Maryland;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequencing Center (NISC),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Email: cgapbs-r@mail.nih.gov
Tissue Procurement: Jeffrey Green M.D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NIH-MGC Project URL: http://mgc.nci.nih.gov
Contact: MGC help desk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Direct Submission
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/note="Vector: pCMV-SPORT6"
1210 c 1210 g 568 t
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                                                                                                                                                                                                                                                                                                                                       /tissue_type="Mammary tumor. C3(1)-Tag model. Infiltrating
ductal carcinoma. 5 month_old virgin mouse."
                                                                                                                                                                                                                                                                                                                                                                                                        /map="FVB/N"
                                                                                                                                                                                                                                                                                                                    /clone_lib="NCI_CGAP_Mam6"
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Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                        /clone="IMAGE:5351783"
                                                                                                                                                                                                                                                                                                                                                                                                                               /db_xref="taxon:10090"
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	snArgLeuLeuSerValGlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGl 	₽ ₹
258 202	239 GlyAlaValAspLeuGlyValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPhegly	8 %
238 198	SeraigProalavalGln             	8 \$
232 192	223 ValArgThrValLeuAlaProAlaLeuAla	8 8
222 186	eralaargasnala     GTAAGGCAGGAGCG	₽ ₹
207 180	193 AlaAlaSerValLysArgHisSerProSerLeuAlaArgGlnVal	₽ ¥
192 174	174 AlaThrGlyAspLeuHisTyrLeuSerAlaSerProAspArgLeuHisAspAlaMet	₽ ¥
173 168	YThrLysMetMetAspArg     :::::  ACCCAGGTCAAGACTGACAGG	8 8
154 162	150	η γ <sub>γ</sub>
149 156	ATGGTAAAGAAGAAGATGTC	8 8
145 150	130 LeuLeuGlnTyrMetGlnPro	₽ ¥
129 144	ThrProPheAlaMetAlaSer      AAACCTTTGGGGAAGAGCTCC	8 8
109 139	aAspThrPheAlaLysAlaGluLysLeu	₽ ₹
89 137	aLeuIleGluThrArgAlaSerArgLeu    ::: GAGTCAGAGAGTGAC	8 %
69 135	50 ThraspHisValPheAlaAlaHisLySLeuProProAlaAspSerAlaAspGlyGlnAla	ይ <del>ጃ</del>
49 130	30 SerValArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrLeu :::             ::: 1246 ACCTCAGCCCCGCCAAGGAGTCATCCCAGAAAGGGGCTCCTGCAGTCACCCCTGGAAAG	8 8
29 124	11 ProvalThrAlaThrAspSerPheArgThrAlaSerAspAlaSerLeuAlaSerSer 	8 8

SOUR OR REFE AU TI JO REFE AU TI	RESULT AY10711 LOCUS DEFINIT ACCESS VERSION KEYWORK	Db 4	рb	Qy	Db	Qy	Db Qy	Дb	- Qy	DЪ	Qy	Db	Qy	Qy	рь	Qy	ф	Qy	Дb	Qy	Db	Qy	Дb	Qy
ORGANISM ORGANISM TITLE JOURNAL REFERENCE AUTHORS TITLE JOURNAL REFERENCE AUTHORS TITLE	RESULT 8 AY107104 LOCUS DEFINITION ACCESSION VERSION KEYWORDS	2830	70	458	25	438	421 2671		401	2551	398	2491	388	371 2431	2371	356	2320	339	2260	320	2200	305	2140	295
Zea mays.  I Zea mays  Zea mays  Zea mays  Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;  Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; PACC  clade; Panicoideae; Andropogoneae; Zea.  I (bases 1 to 2012)  Halney,C.F., Dolan,M., Miao,G.H., Vogel,J.M., Whitsitt,M.S.,  Arthur,L.W., Hanafey,M., Morgante,M. and Tingey,S.V.  Maize Mapping Project/DuPont Consensus Sequences for Design of  Overgo Probes  Unpublished (2002)  2 (bases 1 to 2012)  Coe,E.C.  Direct Submission	AY107104 2012 bp mRNA linear HTC 25-MAY-2002 2ea mays PC0148976 mRNA sequence. AY107104 AY107104.1 GI:21210182	AAGAAGGCCTCAGGCACCACTG 2851	· >	luGluGlyGlyThrAlaAla-SerProSe 47		lAsnAsnLeu 45	ThrGLyTyrValAlaAspGLDThrValLysLeuAlaLysThrValLysAsp 437 GCGTCCCCAGAGAAGAGCATAGAAGGGTCCTCAGAGAGCAGTGATGAGGATCTG 2724	GGATGCTATCTCCCAGCCTGCCAGAGGCAAAGCGTCAGGTCCA 26	AlaValLysLysAlaGluSerPheIleGlnAspThrValLysSerThrAlaSerSerThr 420	GCCCAGCCAGGGAAGACAGAGGACTCAGACAGCAGTAGTGAAGAGTCTGACAGTGACACA 2610	Thraspero 400	CAG 2		ThrLysAlaAlaValSerGlnLeuThrAsnLeuAlaGlySerAlaAlaVal 387     ;; ;; ;;    ;; ;;    CAGATAAAACCTGTGGGGAAGACCTCTCAGGTCAGGCTGCCTGC	:::     :::::    :::	GlyLysLeuGlnGluMetAlaThrLysAsnIleThrAspProAla 370	AAAGCAGGGGCCCAGCAACCCAAGCCCAGAAGGGTCCCGTGGCTGGCACA 2370	snGlyLe	CACCTGTTCCGAACAGCACCGTCTCTGCAAGGGGCCAGCGGTCTGTGCCAGCCGGGGA 2319	LeuProLeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAla 338	ACTAAGACACCTCCAGCGTCTGCATCTGGAAAAGCTGTGGCTGCTCCAACCAA	SerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGly 319	ACCCCAGCACAGGCCACGCCCTTGGGGAGACTTCCTCAGGCCAAAGCCAACCCACCTCCC 2199	LeuGluAlaTyr

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                             LeuAlaArgGlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAla
                                                                                                                                                                          MetAspGlnValGlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSer 182
                                                                                                                                                                                                                                                    rpLeuProAlaProLeuLysProLeuThrProLeuIle-SerGlyAlaLeuSerGlyAla 162
                                                                                                                                                                                                                                                                                       CTCCCCGAGCAGCAGTATCAGCCAAACAGCGGCAACGCCAACGTTAACCTCCTGGACATT 1040
                                                                                                                                                                                                                                                                                                                  hrProPheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspT 143
                                                                                                                                                                                                                                                                                                                                                           GAAGGCAGCCAGGGCCCTCTGCTCCATGGCAAGGCGCCCTTGCATGGCGTGATGACGCAT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IleAlaAspTyrLeuThrAspHisValPheAlaAlaHis-LysLeuProProAlaAspSe
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CTTGGG-----GTCTTCTCTGGCAACAGCGGTGGATGGCCCGGAAGCAGCCATCAGGAC 1244
                                                                    CAACTTCCCGAGCAGCAGCAGCCAGCCAGCAGCAGCCCCGCGTCAACCTCCCTAAC
                                                                                                     AlaSerProAspArgLeuHisAspAlaMetAlaAlaSerValLysArgHisSerProSer 202
                                                                                                                                          TCTGGCAGCCAGGGCCCTCTGCTCCACGGCAAGGAGCCCTTCCATAGCCATGACCTGACG
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Mapping Project 397 g 331 t
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/db_xref="MaizeDB:638791"
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/clone="PCO148976"
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/clone_lib="Maize Mapping Project/DuPont Cornsensus
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	COMMENT	ACCESSION VERSION KEYWORDS SOURCE ORGANISS REFERENCE AUTHORS TITLE	RESULT 9 AL545051 LOCUS DEFINITION	Qy	Оу	0 da	Qy Db	Оу	Qy Db	Qy	Qу
	r s	ACCESSION VERSION KEYWORDS SOURCE ORGANISM REFERENCE AUTHORS TITLE	RESULT 9 AL545051 LOCUS DEFINITION	369 1581	363 1521	1401 343 1461	303 1389	283 1368	263 1317	243 1272	223 1245
/organism="Homo Saphens" /db_xref="taxon:9666" /clone="CSODI013YF04" /clone_lib="LTI_NFL006_PL2" /tissue_type="placenta" /tissue_type="placenta" /note="Vector: pCMVSPORT 6; Site_1: NotI; 1st strand cDNA /note="Vector: placenta" /note="Vector: placenta" /note="Vector: placenta" /note="Vector: placenta" /note="Vector: placenta" /enriched, double-stranded cDNA was dispested with Not I and cloned into the Not I and Eco RV sites of the pCMVSPORT 6 /vector: Library was normalized. Library was constructed by Life Technologies. Contact: Feng Liang Life Technologies, a division of Invitrogen 9800 Medical Center Drive /nockville, Maryland 20850, USA Fax: (1) 301 610 8371 /note="CSODIA" /note="CSODIA" /note="CSODIA" /note="Vector: placenta" /note="CSODIA" /note="	nal de S - France cns.fr, iers			ProAlaThrLysAlaAlaValSerGlnLeuThrAsnLeuAlaGly 383	ThrLysAsnIleThrAsp	CTGATGAAGGCGGCTCAGATGGGCTCGACGACGACGACGACAACCGC 1460 GlnAsnGlyLeuAlaGlyGlyPheAlaGlyValGlyLysLeuGlnGluMetAla 362 :::	SerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeu 322	GluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLys 302	ServalGlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLys 282    :::	LeuGlyValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeu 262        :::::            ::: AACGGCGGCAGCAGCAGCACCGAGCATGGTAACGGGATGGCG 1316	ValArgThrValLeuAlaProAlaLeuAlaSerArgProAlaValGlnGlyAlaValAsp 242

Qy 29 Db 76	Qy 27 Db 73	Qy 25 Db 67	Qy 244 Db 615	Qy 22 Db 58	Qy 20 Db 53	Qy 18 Db 48	Oy 16 Db 44	Oy 14 Db 39	Qy 12 Db 33	Qy 108 Db 300	Оу 10 Db 24	Qy 8 Db 18	Qy 7 Db 12	Оу 5 ОБ 6	US-09-82	Alignment Pred. No. Score: Percent S Best Loca Query Mat DB:	BASE COUNT ORIGIN
8 yrLysAl     4GCGGC	8 lyLeuLy :: 5 AGACCAG	9AsnAr    5 GGAGGCG	8-14 1-39	4 gThrValLeuAla	4 aArgGln      1 AAGAAGC	4 rProAsp :    9 ACCGTGG	7 GlyThrL	7 ProLeuL 9 GCCCACG	8 AlaSerL 9 GACGGCA	G :: Ly	0 GTGAATCCCC	6 AlaSerAr     0 GAGTCGGG	2 Aspvalh :::::: 0 GAGATGG	3 ValPheA :::   0 ATAACGG	5-414-7 (	nment Scores:  . No.:  e:  ent Similarity   Local Similar:   y Match:	<b>–</b>
SAlaIleLys:    ::: GGCGGTTACAJ	sAspLys ; AACGGCC	gLeuLeu      GCTCCCG	rMetAla      GCGTGGA	LeuAlaP	ValLeuA       GTGG	ArgLeuH ::: AAAAGGC	уѕметме	ysProLe :: CCAAGGT	euLeuGl ACACTGT	spArgLe    AC	CCCAGAC	rgLeuHi     GCCTGCG	isasnal    ::  AGAATTC	heAlaAlaHis        CGGCGGCGACG	(1-486)	: Lty:	73 a
'SSerAlaSerTy1 :::   ::: !AACAGCTACGGTO	.yLeuLysAspLysGluProLysAlaG :::    :::     GACCAGAACGGCCTTTCCAAGGGCGG	AsnArgLeuLeuSerValGlnSerAr         aGGCGGCTCCCGATCCTCCCGGGGCG	tAlaGlyGlyLeuAlaAlaAsnAlaGly 	roAlaLeuAl	SpThrGlyVa   ::: ATTCGGCTTC	roAspArgLeuHisAspAlaMetAlaAlaSer      :::     :::	tAspArgAla      -GACGTGGCT	uThrProLet :    TAAGAAGCTO	AlaSerLeuLeuGlnTyrMetGlr ::::: GACGGCAACACTGTGGAGCTGAA(	uAlaThrThi	AGACCAAGCGCTCC	gLeuHisPheGluGly     ccrgcgcggccactro	aGlnIleThi :   ::: TCAGTTGTG!	sLysLeuPro      GGCGAAACCT	x AL545051	0.502 111.50 37.30% 22.43% 4.62%	268 c
ິດ ລ	lnLeı	SerArgAspI      GGCGGCCG/	AlaAlaAsni ::::: AGCAGTCCCC	laSerArgP; :::     ACAAGGC	ALALAVALG ;;; CGTGTATTTO	etAlaAlaSe ::     GCCGACAA	aThrGlyAsı          GAGGGCGA	IlleSerGl	ProAlaIle      ::  CGGGCGGT	ThrserGl	CGTTGCTT	/GluThrPro      GAGGCCTT	cAlaLeu      AAGCTGTT	oProAlaAsı   ;;;  CGGAGCTC	1 (1-975)	Length Matches Conser Mismatt Indels Gaps:	371 g
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AsnAlaGlyLysArgMetA     GAGGCGGCG	nAspTrpLeuGluAlaT	erArgAspHisGlnArgGlyGlyAlaLeuValLeuG 	ValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGly	ProAlaLeuAlaSerArgProAlaValGlnGlyAlaVal-AspLeuG :::       ACAAGGCCGCGGTGGTCAAGTTCCATCCGATTCAG	AlaArgAsnAlaValAr	pArgLeuHisAspAlaMetAlaAlaSerValLysArgHisSerProSerLeuAl ::: GAAAAGGCCGAGATTATTGCCGACAAGCAGTCCGGC	lyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyr-LeuSerAlaSe	lal	.laSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAla	SLeuAspArgLeuAlaThrThrThrSerGlyAlaLeuArgAlaThrProPheAlaMet :        :::       :::  GCGGACGCGCCATGGCCGCCTCGCCCCATGCCGTG	ThrPheAlaLysAlaGlu    :::::    CGTTGCTTTGGCTTCGTGACCTACTCCAATGTGGAG	llaAsp      CGGACTGCGTGGTGGTG	IleGluThrArg ::::::    TCAATGTGCAGACGAGT	ValPheAlaAlaHisLysLeuProProAlaAspSerAlaAspGlyGlnAlaAlaVal:::		975 83 55 127 105	1 others
318 811	298 763	278 734	258 674	244 614	224 579	204 530	184 488	166 443	146 398	127 338	107 299	101 239	85 179	71 119			

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Butheria; Primates; Catarrhini; Hominidae; Homo.

1 (bases 1 to 948)
NHH-MGC http://mgc.nci.nih.gov/.
National Institutes of Health, Mammalian Gene Collection (MGC)
Unpublished (1999)
Contact: Robert Strausberg, Ph.D.
Email: cgabbs-r@mail.nih.gov
Tissue Procurement: DCTD/DTP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BM044579 948 bp mRNA linear EST 07-NOV-2 603622231F1 NIH_MGC_40 Homo sapiens cDNA clone IMAGE:5447983 5',
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           High quality sequence stop: 744.
Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cDNA Library Preparation: Ling Hong/Rubin Laboratory CDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL) DNA Sequencing by: Incyte Genomics, Inc. Clone distribution: MGC clone distribution information can be found through the I.M.A.G.E. Consortium/LLNL at: http://image.llnl.gov http://image.llnl.gov m.column: 08
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/db_xref="taxon:9606"
/clone="IMAGE:5447983"
/clone_lib="NIH_MGC_40"
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                               Anopheles gambiae
Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta;
Neoptera; Endopterygota; Diptera; Nematocera; Culi
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BM588321.1 GI:18884182
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                                                         Pterygota;
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Tel: 2404533151
Fax: 2404534580
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Email: HoltRA@celera.com Plate: NU01004AAR row:
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Holt,R.A., Lin,J.-J., Murphy,S.D., Evans,C.A., Kraft,C.L., R., Collins,F.H., Venter,J.C. and Hoffman,S.L. Celera Anopheles gambiae EST project Unpublished (2002)
Contact: Holt R.A.
                                                                                             20850,
14
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adult mosquitoes (mixed sex) frozen on liquid nitrogen 2 hours after human blood feeding. cDNA inserts >500 bp cloned directionally into pSport 1. Not 1 site is 3'. Clones available through the Malaria Research and Reference Reagent Resource Center (www.malaria.mr4.org)\*\* 234 c 135 g 37 t /organism="Anopheles gambiae" /strain="RSP-ST (Reduced susc. chromosome)" /note="Vector: pSport1; Site\_1: Sal1; Site\_2: /clone\_lib="A.Gam.ad.cDNA.blood1" to Permethrin ı Not1; std. Whole

Length:
Matches:
Conservative:
Mismatches:
Indels: 711 56 23 144 15

SerAlaArgAsnAlaValArgThrValLeuAlaProAlaLeuAlaSerArgProAlaVal 237

GlyAsnArgLeuLeuSerValGlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeu GlnGlyAlaValAspLeuGlyValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPhe GCAACAGCAACAACAACAACAATTGCAGCAGCATCAACAGCAACAAATGCAGCAGAT 277 96

GCATCAAGAAAATGCACTTGCTCAACAAAAACAGCAGCATCAGGTGCAGCAATCACAACA -----GlyLeuLysAspLysGluProLysAlaGlnLeuSerGluGluAsnAspTrpLeu 295 216

TGTCCAGGA---AAATCAACAGCATCTGCAGCACATGCAACAGCATCAAATGCAACAATT

ACAACATCAGCAGGAGCATCAGCAGCAAATATCGCAACAACAGCAACAACCACCAACAACAA GluAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLys

333 315 273

ArgMetAlaGlyLeuProLeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLeu 335

ValSerAlaSerSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyVal -----GCAACAGGCAGAACCTCAGCTGCAGCAACAGCA 355 378

GlyLysLeuGlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAlaAlaVal 375 438

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AUTHORS
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                                                                                                                                               AL SUBmitted (08 SEP-2000) Genoscope - Centre National de Sequencage,
2 rue Gaston Cremteux, CP 5706, 91057 EMPY cedex, FRANCE. (E-mail:
3 seqref@genoscope.cns.fr - Web: www.genoscope.cns.fr)
This GSS is part of a random genomic sequencing program of thirteen
yeast species: Saccharomyces bayanus var. uvarum, Saccharomyces
exiguus, Saccharomyces servazzii, Zygosaccharomyces rouxii,
Saccharomyces kluyveri, Kluyveromyces thermotolerans, Kluyveromyces
lactis var. lactis, Kluyveromyces marxianus var. marxianus, Pichia
angusta, Debaryomyces hansenii var. hansenii, Pichia sorbitophila,
Candida tropicalis and Yarrowia lipolytica. Genomic inserts of 3 to
5 kb were prepared and both extremities were sequenced. See
keywords for description of this sequence and for the sequence of
the other extremity of this insert.
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AL431231.1 GI:1221
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Genomic exploration of the hemiascomycetous yeasts: 1. A set of yeast species for molecular evolution studies

FEBS Lett. 487 (1), 3-12 (2000)
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Eukaryota; Fungi; Ascomycota; Saccharomycotina;
Saccharomycetales; Saccharomycetaceae; Pichia.
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   ø
                     /clone_lib="BBOAA"
/note="end : T7"
                                                           /db_xref="taxon:4905"
/clone="BB0AA002G01"
                                                                                                /strain="CBS 4732"
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                                                                                                                                 LysSerThrAlaSerSerThrThrGlyTyrValAlaAspGlnThrValLysLeuAlaLys :::|||||||| ::: ||||||
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TCCAGTTGGGCATCCATGTTCGGCTCCAGCAGTGCTTCTCGCTCTAGCCAGATTACTGCA
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ValAsnAsnLeuArgGlnArgProAlaArgGluAlaAspIleGluGluGlyGlyThrAla 473
                                                                        ThrValLysAspMetGlyGlyGluAlaIleThrHisThrGlyAlaSerLeuArgAsnThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                    LysLeuGlnGluMetAlaThrLysAsnIleThrAspProAlaThr------Lys
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                                                                                                                  AGCAACACTGCTTCCAGTGTTTCTAGCTATGTTTCCGACCAG---
                                                                                                                                                                                                                          AspProAlaValLysLysAlaGluSerPheIleGlnAspThr---
                                                                                                                                                                                                                                                                   GCAACCTCCAACATTCCTAAGACTGCTTCGAGCGGCTTCTCCAGCTCCCTCACGGCAACG
                                                                                                                                                                                                                                                                                                                                            AGCGCTTCAAGCCAAGTCACGACGGTGAGTTCATCTAGTGCTGCCTCTAGCGCTTCCAGT
                                                                                                                                                                                                                                                                                                                                                                               AlaAlaValSerGlnLeuThrAsnLeuAlaGlySerAlaAla-----
                                                                                                                                                                                                                                                                                                                                                                                                                     AGTGTTTCTGCTGGCAGCTCGAGTAATKTTTTCAGTGCTGCCCCCAGCTCCATTTTCAAC
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	Oy       181 uSerAlaSerProAspArgLeuHisAspAlaMetAlaAlaSerValLysArgHisSerPr       201
	Qy 168ThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLe 181 ::::::::   :::   :::
COM	Qy 157 GlyAlaLeuSerGly-AlaMetAspGlnValGly
LT.	Qy 137 AlaIleAsnLysGlyAspTrpLeuProAlaProLeuLysProLeuThrProLeuIleSer 156
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	Fav. 1 (530) - 750 - 0550		
, ,	Tel: 1-(530)-742-1742		
la at D	University of Californ		
able Crops, R.W.Michelmore Lab	Department of Vegetabl		
Contact: Alexander Kozik [R.W.Michelmore]	Contact: Alexander Koz	2	COMMENT
.ucaavis.edu/	nccp://compgenomics.uc	TOTIENAL	2
er ESTs from the Compositae Genome Project	Lettuce and Sunflower	E	TIT
,	Church, S., Jackson, L.		
gie,J., Eli Y., Lai,Z.	Lin,H., van Damme,M., .P., Kolkman.T., Slaha	-	
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TGCGCCTGCTTCTGCAGCTTTGGCTGCACCTGGGTGTCTGTGGATGGTATCCGCGGCTGA 181		240	8
rAspAlaMetGlyAlaValArgSerLeuValSerAlaSe 339		319	QΥ
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aGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLy 299	uLysAspLysGluProLysAlaG	279	Oy
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                                                                                                          GlnLeuThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAlaAlaLeu
                                                                                                                                                ACCTACGATAAAGCTCGTAATGCGAAGGATGCGGCAGCGTCTGCTGCTGAGTACGTTAAA
                                                                                                                                                                                 Ala-----ThrLysAsnIleThrAspProAlaThrLysAlaAla-----ValSer 376
                                                                                                                                                                                                                          AAGGCCCGTGGTGCAAAGGATGCCGCAGGGTCTGCT---GCGGGGTCTGTTAAGGACGCA 409
                                                                                                                                                                                                                                                            ThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLySLeuGlnGluMet 361
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                                  ThrThrAspProAlaValLysLysAlaGluSerPheIleGlnAspThrValLysSerThr 416
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TAG_SEQ=GCCATCGGG"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /clone="QHG8M04"
/clone_lib="QH_EFGHJ sunflower RHA280"
/lab_host="E.coli"
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                                                                                                                                                                                                                                                                                                                                                                                                                                  through the I.M.A.G.E. Consortium/LLNL at: http://lmage.llnl.gov
Series: IRAK Plate: 36 Row: e Column: 6
This clone was selected for full length sequencing because it
passed the following selection criteria: GenomeScan gene
prediction, Similarity but not identity to protein
This clone has the following problem: frame shifted.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Contact: amg@bcm.tmc.edu
Gunaratne, P.H., Garcia, A.M., Lu,
Yoon, V.S., Kowis, C.R., Lawrence,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Tissue Procurement: Gilbert Smith, Ph.D.

CDNA Library Preparation: Life Technologies, Inc.

CDNA Library Arrayed by: The I.M.A.G.E. Consortium (LLNL)

DNA Sequencing by: Baylor College of Medicine Human Genom
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NIH-MGC Project URL: http://mgc.nci.nih.gov
Contact: MGC help desk
Email: cgapbs-r@mail.nih.gov
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Submitted (19-DEC-2001) National Institutes of Health, Mammalian Gene Collection (MGC), Cancer Genomics Office, National Cancer Institute, 31 Center Drive, Room 11A03, Bethesda, MD 20892-2590,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mus musculus
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus
1 (bases 1 to 2347)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequencing Center
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                                                                                                                                                                                                                /tissue_type="Mammary tumor. Metallothionien-TGF alpha
model. 10 month old virgin mouse. Taken by biopsy."
/clone_lib="NCI_CGAP_Mam1"
/lab_host="DH108"
/note="Vector: pCMV-SPORT6"
a 652 c 548 g 538 t
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                                                                                                                                                                                                                                                                                                                                                                           /organism="Mus musculus"
/db_xref="taxon:10090"
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109.50
32.37%
20.61%
4.54%
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  BC020083
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Conservative:
Mismatches:
Indels:
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to zinc finger
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, Muzny, D.M.,
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Sea Job	Db	Qy	DЬ	Qy	Дb	Qy	Ф	Qy	Db	Qy	Дb	Qy	Db	Qy	皮	Qy	Db	Qy	Db	Qy	Db	Qy	DЬ	Qy	Ъ	Qy	Дb
time	1799	474	1739	456	1736	436	1682	424	1622	408	1562	393	1502	373	1442	366	1382	351	1328	339	1268	324	1208	320	1148	305	1094
Search completed: January 31, 2003, 07:16:15 Job time : 1595.38 secs	GCA 1801	Ala 474	AGCAGTGCTCCTAAAGCGCGT	AsnLeuArgGlnArgProAlaArgGluAlaAspTleGluGluGlyGlyThrAla 473	AAA 1738	LysAspMetGlyGlyGluAlaIleThrHisThrGlyAlaSerLeuArgAsnThrValAsn 455	GGTTCCCCTGAACCTTCTCCAGCAGCTGCCTTCCAGACTGTCTCCCCAGCAAGG 1735	LysLeu	CCTGCTCTGCCAGCCATCTCTTTGGAAGCCTCTATGACAACTCCAGTAACTTCTCCTCAA 1681	PheIleGlnAspThrValLysSerThrAlaSerSerThrThrGlyTyr 423	CCAGTAGCATCCTCGCCTGTCCCTGAAGTCTTTGTAGCAGTCTCTCCAGCTTCCTCA 1621	ThrAlaAlaLeuThrThrAspProAlaValLysLysAlaGluSer 407	CCAACAGCCTCCCAGCAGCCTCCTTGACAGCATCTGCAGAAAATCTCTCCCAGCTGTCTCT 1561	AlaAlaValSerGlnLeuThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThr 392	:::   ::: CCCCTGACTGAGCCAGCCAGCCAGCCAGCTAGTACTACATCCAGCAGTTTCA 1501	IleThrAspProAlaThrLys 372	ACAGTTGCAGTGACTCTGAACAGGAAGAAATAGAGACCCAGTCTTCAAACTTCCAACGT 1441	GlyPheAlaGlyValGlyLysLeuGlnGluMetAlaThrLysAsn 365	ACCTCCCCACCTGTCTTAGGGGAGTCTGTCTTGCAAGATAACAGCTTTGGACTG 1381	SerSerLeuThrGlnAsnGlyLeuAlaLeuAlaGly 350	AATGCCTTCAGTCTCCTGGCAGACGACAGCCAGACATCAGCCTCCATCTTTGTCAGCCCT 1327	MetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAla 338	TIGCCTCTGGAGGGCAACCCTGTGATCTCTGCCCTCGATTGCCCTGCTCTCAGTAATGCT 1267	LeuProLeuAsp 323	CCAGTGAGTGCCAGTCTTTATGGTATAGATGATGCGGAGCTGATGGGTGCAGAAGACAAG 1207	aAlaLeuAs	

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Maximum DB :
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-Q-/cg12_1/USFTO_spool/US09825414/runat_28012003_161742_26114/app_query.fasta_1.1294
-DB-Issued_Patents_NA -OPMT-fastap -SUFFIX-p2n.rni -MINNATCH-0.1 -LOOPCL-0
-DB-ISSUED_VALUE - START-1 -END--1 -MATRIX-blosum62 -TRANS-human40.cdi
-LIST-45 -DOCALIGN-200 -THR_SCORE-pct -THR_MX-100 -THR_MIN-0 -ALIGN-15
-MODE-LOCAL -OUTFMT-pto -NORM-ext +HEAPSIZE-500 -MINLEN-0 -MAXLEH-200000000
-USER-US09825414_@CGN_1_1_40_@runat_28012003_161742_26114 -NCPU-6 -ICPU-3
-NO_MANP -LARGEDUERY -NEC_SCORES-0 -WAIT -LONGING -DEV_TIMEOUT-10
-WARN_TIMEOUT-30 -THREADS-1 -XGAPOP-10 -XGAPEXT-0.5 -FGAPOP-6 -FGAPEXT-7
-YGAPEP-10 -YGAPEXT-0.5 -DELOP-6 -DELEXT-7
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Listing first 45 summaries
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                      7.0 4403765 4 US-09-103-840A-2
6.8 4411529 4 US-09-103-840A-1
6.1 6744 1 US-08-119-125A-2
5.9 46819 4 US-09-453-702B-72
5.7 4411529 4 US-09-103-840A-1
5.7 32768 4 US-08-961-527-364
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5.5 403765 4 US-09-177-349-2
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/cgn2_6/ptodata/1/ina/5B_COMB.seq:*
/cgn2_6/ptodata/1/ina/5B_COMB.seq:*
/cgn2_6/ptodata/1/ina/6B_COMB.seq:*
/cgn2_6/ptodata/1/ina/BCTUS_COMB.seq:*
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Sequence 7, Appli
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6, App	US-08-457-646A-	8958		•	43	
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6, App	US-08-258-261B-	8958		•	40	
1, App	PCT-US93-0	530		N	w	$\sim$
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۲	US-07-689-008-1	540		•	33	
26	US-09-071-035-26	977	•	•	32	
2	US-09-071-035-	977		•	31	
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9	US-08-968-685A-	542	•	$\sim$	28	
	US-09-142-	300	•	N	27	
δ	US-08-614-377A-	300	٠	∾	26	
6	US-08-194-290-6	300	•	N	25	
6	US-09-085-199B	251		$\sim$	24	
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,	US-09-426-436-	2297	•	٠	22	
equence 1, Appl	US-09-075-904-1	0341		•	21	
equence 1, Appl	US-08-247-901C	341		•	20	
equence 5, Appl	US-09-105-537-	6778		•	c 19	_
equence 1,	US-09-105-537-	5872	•	•	18	
equence 32, App	US-09-105-537-	1220	•	•	c 17	_
equence 5, 🌶	US-08-591-	106	•	•	16	
equence 10, App	US-09-147-236-	6836		N	15	
e 1	US-09-147-236-	16836 4	5. ω	128	14	
equence 19, App	US-09-320-878	8506		•	c 13	_

APPLICANT: FLEISCHMAN, Robert D.
APPLICANT: WHITE, OWER R.
APPLICANT: FRASER, Claire M.
APPLICANT: FRASER, John C.
TITLE OF INVENTION: DNA SEQUENCES FO
TITLE OF INVENTION: TUBERCULOSIS
FILE REFERENCE: 24366-20007.00
CURRENT APPLICATION NUMBER: US/09/10
CURRENT FILING DATE: 1998-06-24
NUMBER OF SEQ ID NOS: 2
SOFTWARE: PATENTIN VET: 2.1
SEQ ID NO 2 Percent Similarity:
Best Local Similarity:
Query Match: Alignment Scores: Pred. No.: US-09-103-840A-2 US-09-825-414-7 (1-486) x US-09-103-840A-2 (1-4403765) Score: GENERAL INFORMATION: Patent No. OTHER INFORMATION: CDC 1551
OTHER INFORMATION: "n" bases at various
OTHER INFORMATION: represent a, t, c or ORGANISM: Mycobacterium tuberculosis TYPE: DNA FEATURE: LENGTH: 4403765 2, Application US/09103840A o. 6294328 0.0596 168.00 37.67% 26.02% 6.97% US/09/103,840A FOR STRAIN ANALYSIS Mismatches: Indels: Gaps: Matches: Conservative: Length: positions throughout the sequence  $\boldsymbol{g}$ Ï MYCOBACTERIUM

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                                                 462 laArgGluAlaAspIleGluGluGly---------GlyThrAlaAlaSerP 476
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CCCGCGCCGCCGCTGTTGCCGGCGGTGCTGCTGCTGGTGACGCCTGCTCCACCGTCGCCGCCT 3935797
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; Sequence 1, Application
; Patent No. 6294328
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CURRENT APPLICATION NUMBER: US/09/103,840A
CURRENT FILING DATE: 1998-06-24
NUMBER OF SEQ ID NOS: 2
SOFTWARE: Patentin Ver. 2.1
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TITLE OF INVENTION: DNA SEQUENCES FOR
TITLE OF INVENTION: TUBERCULOSIS
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euProLeuAspMetAlaThrAspAlaMetGly---AlaValArgSerLeuValSerAlaS 339
                                                                                                                                             ysAspLysGluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysA 300
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                                                         laIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyL 320
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                                    -GCCGCCTCTGCCGCCGGTGCCGCCGTTGCCGCCGGCCGAGCCGGTGCCGGCC 3942772
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25.75%
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TITLE OF INVENTION: Char
TITLE OF INVENTION: anti
TITLE OF INVENTION: prot
TITLE OF INVENTION: prot
NUMBER OF SEQUENCES: 3
CORRESPONDENCE ADDRESS:
ADDRESSE: Centraal D:
STREET: Edelhertweg 1:
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                                                                                                            COMPUTER: IBM compatible
OPERATING SYSTEM: MS-DOS v.6.0
SOFTWARE: WORDERFECT v.6.0
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/119,125A
FILING DATE: 20-SEP-1993
                                 PRIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/
FILING DATE: 19-MAR-1992
                                                                                                                                                                                                                                                               COMPUTER READABLE FORM:
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APPLICATION NUMBER: NL 9100510 FILING DATE: 21-MAR-1991
                                                                                                   CLASSIFICATION:
                                                                                                                                                                                                                                             MEDIUM TYPE: Diskette,
                                                                                                                                                                                                                                                                                      ZIP: NL-8219
                                                                                                                                                                                                                                                                                                     COUNTRY:
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Characteristics of Streptococcus suis and parts thereof, polyl
antibodies derived therefrom and the use thereof for the diag
                                                                                                                                                                                                                                                                                                                                                                                                                                              protection against infection by S. suis in mammals, including
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FEATURE:
NAME/KEY:
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ORIGINAL SOURCE:
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FEATURE:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NAME/KEY:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LOCATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NAME/KEY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LENGTH:
                                                                                                              ValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrLeuThrAspHisVal
                                   PheAlaAlaHisLysLeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspVal 73
                                                                               GAAGAAGAAGCTACTAAAATAGTAGAGAAACTTGCAGAA-----
                                                                                                                                                                                                 AlaThrAspSerPheArgThrAlaSerAspAlaSerLeuAlaSerSerSerValArgSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Nucleic acid with corresponding amino acids
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bp 66 to
                                                                                                                                                                                                                                                                                                                                                                                                                                                             dyad symmetry regions from bp 6611 to 6625 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         dyad symmetry regions from bp 6554 to 6566 and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 start of repetitive Asn-Pro-Asn-Leu sequences bp 2932, 3160, 3355, 3583, 4150, 4444, 4672, 5128, 5356, 5584:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                start of repetitive bp 2869, 3097, 3292, 5065, 5293, 5521:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               signal peptide
bp 361 to 498
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 promoter -10 region bp 176 to 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            promoter -35 region
bp 153 to 158
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Streptococcus suis type II (pathogenic)
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UMBER: 26275
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6.12%
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416	398 ThrAspProAlaValLysLysAlaGluSerPheIleGlnAspThrValLysSerThr 4	_
397	378 LeuThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThr 3 :::	0 ~
377 5085	358 LeuGlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAlaAlaValSerGln 3::::::::::::::::::::::::::::::::::::	0 ~
357 5037	338 AlaSerSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLys 3	0 ~
337 5004		0 ~
317 4944	303 SeralaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMet 3	0 ~
302 4884	283 GluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLys 3 :::    :::::::::   :::	0 ~
282	266 SerargasphisGlnargGlyGlyalaLeuValLeuGlyLeuLysaspLys 2 :::     :::	0 ~
265 4782	246 SermetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeuSerValGln 2 :::	0 ~
245 4731	226 ValleuAlaProAlaLeuAlaSerArgProAlaValGlnGlyAlaValAspLeuGlyVal 2	0 ~
225 4671	206 GlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaValArgThr 2	0 ~
205	186 AspargLeuHisAspAlaMetAlaAlaSerValLysArgHisSerProSerLeuAlaArg 2 :::	0 ~
185 4551	166 ValGlyThrLysMetMetAspArgAlaThrGlyAspLeuH1sTyrLeuSerAlaSerPro 1 :::        4522 ATTTCAGCTGCAACCAGCCCAGCAGATGTT 4	0 ~
165 4521	146 AlaProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGln 1	0 ~
145	141GlyaspTrpLeuPro 14 ::: 4402 ATTGCTAAAGATGCAGCCGCTGCTAAAGAAGCAATTGCAAGCAA	0 ~
140	121 ArgalaThrProPheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLys	0 ~
120		0 ~
110	91 PheGluGlyGluThrProAlaThrIleAlaAspThrPheAlaLysAlaGluLysLeuAsp 1	0 ~
90	74 HisasnAlaGlnIleThrAlaLeuIleGluThrArgAlaSerArgLeuHis 90	0 ~

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Percent Similarity:
Best Local Similarity:
Query Match:
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Pred. No.:
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                                                                                                                             US-09-453-702B-72
                                                          Score:
                                                                                                                                                                                                                                             APPLICATION NUMBER: US/09/453,702B
FILING DATE: 03-Dec-1999
CLASSIFICATION: <Unknown>
PRIOR APPLICATION DATA:
APPLICATION DATA:
APPLICATION NUMBER: 60/110,955
FILING DATE: 04-DEC-1998
ATTORNEY_AGENT INFORMATION:
NAME: Seay, Nicholas J.
REGISTRATION NUMBER: 27386
REFERENCE_DOCKET NUMBER: 960296.95017
TELECOMMUNICATION INFORMATION:
TELECOMMUNICATION 1000 251-5000
TELEPAX: (608) 251-5000
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COUNTRY: US
ZIP: 53701-2113
COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette, 3.50 inch. 1.
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Word Perfect 8.0
CURRENT APPLICATION DATA:
                                                                                                                                            TOPOLOGY: linear
MOLECULE TYPE: DNA (genomic)
SEQUENCE DESCRIPTION: SEQ ID NO: 72:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TITLE OF INVENTION: NO. 6365723el Sequences of E. coli 0157
NUMBER OF SEQUENCES: 265
CORRESPONDENCE ADDRESS:
ADDRESSE: Quarles & Brady
STREET: 1 South Pinckney Street
CITY: Madison
STATE: MI
                                                                                         Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AsnLeuArgGln------ArgProAlaArgGluAlaAspIleGluGluGlyGly 471
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GCAGCGAAACAAGATGCTAAGAATAAGATTGCTAAAGAATCCGACGCTGCTAAGTCAGCC 5346
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ATTGACGCGAATCCAAAC 5364
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                                                                                                                                                                                             LENGTH: 46819
TYPE: nucleic acid
STRANDEDNESS: double
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Perna, Nicole T.
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Welch, Rod
   0.0118
143.50
33.40%
22.48%
5.95%
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 Matches:
Conservative:
Mismatches:
Indels:
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DB :		4 Gaps: 15
-Sn	09-825-	414-7 (1-486) x US-09-453-702B-
g 6	19 32015	ArgThrAlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerSerAspGln 38
Qy	39	SluIleAsnAlaIleAlaAspTyrLeuThrAspHisVal
日	32075	AGCACATCAGCCCGTGAGGCGGCAACCCATGCGACTGATGCTGCGGACTCA 32125
γ	5	euProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGlnIle 78
밁	32126	CACGTCAGCCGGACAGGCCGCGTCGTCGGCT
γ		euIleGluThrArgAlaSerArgLeuH
ğ	32186	GCAGGAACGGCATCAACAAAGGC
VΩ	9	leAlaAspThrPheAlaLysAlaGluLys
В	32216	naaaagtgctgccgctgcagagtcctcaaaaagcgcggctaccag
δ	119	heAlaMetAlaSerLeuLeuGlnTyrM
₽	32276	CAGAAACGAATGCGGCAGTGTCACAA
9	139	coLeuIleSer(
밁	32330	
Q	159	rGlyAlaMetAspGlnValGlyThrLysMetMetAspArgAlaThrGly
В	32369	GCCTCCTCAGCCAGGGATGCGTCGGCTTCAAAAGAGGCGGCAAAATCATCAGAAACG 32425
Qγ	179	SerProAspArgLeuHisAspAlaMetAlaAlaSe
В	32426	TCGAGCGCCAGTAGTGCAGCCTCCTCGGCAACGGCGCAGCAGCAG
Ş	197	ArgHisSerProSerLeuAla
В	32486	AAAACGTCTGAGACAAAC
Qγ	208	ValGlnThrTyrSerAlaArgAsnAlaValAr
밁	32546	SGCTGCATTATC
γ	226	AlaLeuAlaSerArgProAlaValGlnGlyAlaValk
В	32606	CAGTGCCACCGCCGCCGGAAA
Qγ	246	erMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeu
В	32666	TIGTCTGCTTCAACAGCCACAACGAAGGCTGGCGAAGCCACTGAACAGGCCAGCGCAGCA 32725
γQ	266	lyGlyAlaLeuValLeuGlyLeuLysAspLys
В	32726	CGAGTTCTGCTTCCGCAGC
유 왕	286 32786	AlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLysSerAlaSer 305     :::    :::
δ	306	SerGlyAlaAlaLeuAsnAlaGlyLysArgMetAl
₽	32846	GATGAGGCGACCAGACAAGCGTCAGCAGCGAA
δ	319	pMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAl
В	32906	CGAAGGCAGCAGCTGGTAGTGCGACGGCAGCAGCTCAGA
δõ	339	SerSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeu 358

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                                                                                                                                                                                                                                                                                                   Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                                                                                                                                                                                                                                                                                                               ; ORGANISM: Mycobacterium tuberculosis; OTHER INFORMATION: H37Rv US-09-103-840A-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: FLEISCHMAN, ROBERT D.
APPLICANT: WHITE, Owen R.
APPLICANT: FRASER, Claire M.
APPLICANT: VENTER, John C.
TITLE OF INVENTION: DNA SEQUENCES FOR STRAIN
TITLE OF INVENTION: TUBERCULOSIS
FILE REFERENCE: 24366-20007.00
CURRENT APPLICATION UNMBER: US/09/103,840A
CURRENT FILING DATE: 1998-06-24
NUMBER OF SEQ ID NOS: 2
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US-09-103-840A-1
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                                                                                                                                                                                                                                                                                        DB:
                                                                                                                                                                                                                                                                                                                                                                            Alignment Scores: Pred. No.:
                                                                                                                                                                                                                                                                                                                                                             Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: PatentIn Ver. 2.1 SEQ ID NO 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/09103840A Patent No. 6294328 GENERAL INFORMATION:
                                 1632352 CCCTTTGCCGCCGGACCCGCCGACACCCTGGATTCCGTTCTGGCCAAAGAGGTTCCCCGC 1632411
                                                                                                      1632292 GCCGAAGGCGAAGTTGCCGTTGGCGCCGTTGCCGCCGTCACCGGCGAGCCCGGCCCCC 1632351
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TYPE: DNA
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                                                                                                                                      36 SerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrLeuThrAspHisValPheAla 55
 76
                                                                   56 AlaHisLysLeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsn
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                                                                                                                                                                                                                                                                                      60.7
138.50
33.91%
23.64%
5.74%
--AlaGlnIleThrAlaLeuIleGluThrArgAlaSerArg 88
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Matches:
Conservative:
Mismatches:
Indels:
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	398 ThraspProAlaValLysLysAlaGluSerPhe	Qy
	379 ThrasnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThr 397	Оy
	359 GlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAlaAlaValSerGlnLeu 378	g V
	339 SerSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeu 358 :::::: 1633111 GGTGCCATCCGCGCCTGCCCCCAGGCCGTTAAGGCCGGTGGCGCCGGT 1633158	D V
=	319 GlyLeuProLeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAla 338	P Qy
<del></del>	312 AsnalaGly	D D
	299LysalaIleLysSerAlaSerTyrSerGlyAlaAlaLeu 311	D Qy
	279 LeuLysaspLysGluProLysalaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyr 298	Qy Db
	259 AsnArgLeuLeuSerValGlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGly 278 :::    :::	Qy Db
·	241 ValaspleuGlyValSerMetalaGlyGlyLeuAlaAlaAsnAlaGlyPheGly 258	В 8
	229 ProAlaLeuAlaSerArgProAlaValGlnGly	P 64
	209 AspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaValArgThrValLeuAla 228               1632658 GACACCGGCCATGCCGCCCGCCCTTTGCCGCC	g Qy
	189 HisAspAlaMetAlaAlaSerValLysArgHisSerProSerLeuAlaArgGlnValLeu 208 1632657 1632657	D D
	9 LysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuS            46CGAGGAACCGGC	Оy
	149 LysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThr 168 :::    :::    ::	DP Pp
	129 SerLeuleuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAlaProLeu 148 :::        1632550 GTCGCCCCGGAAGTCTCCGCCCCGGCC	ρ δ
	109 LeuAspArgLeuAlaThrThrSerGlyAlaLeuArgAlaThrProPheAlaMetAla 128	ду СУ
	89 LeuHisPheGluGlyGluThrProAlaThrIleAlaAspThrPheAlaLysAlaGluLys 108	g Qy
	1632412 CAAACCGCCGGGCCTTGGCCGGCGTTACCGCCTTGCGCGCC 1632456	ᅡ

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RESULT 6 US-08-961-527-71
; Sequence 71, Application US/08961527
patent No. 6420135
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bb 1633306 GGGGGCGCCGTTGCCGGCGGCACCTCCGGCGCCGCCATTGCCGACCAGCCCGCCGGCCCC 1633365
 Вb
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Best Local Similarity:
Query Match:
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GENERAL INFORMATION:
APPLICANT: Charle
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                                                                                                                                                                                                                                                                                                                                TELEFAX: (301) 309-85: INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                         ATTORNEY/AGENT INFORMATION:
NAME: Brookes, A. Anders
REGISTRATION UNMBER: 36,373
REFERENCE/DOCKET NUMBER: PB.
TELECOMMUNICATION INFORMATION:
   4488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER: HP Vectra 486/33
OPERATING SYSTEM: MSDOS version 6
SOFTWARE: ASCIL Text
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/961,527
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PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COMPUTER READABLE FORM:
MEDIUM TYPE: Diskett
                                                                                                                                                                                                                                                                                                               SEQUENCE CHARACTERISTICS:
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ADDRESSEE: Human Gen
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CITY: Rockville
STATE: Maryland
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HP Vectra 486/33
                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                (301) 309-8504
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Matches:
Conservative:
Mismatches:
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GTCTGAATCGGCATCAACGAGTGCGTCAGCCTCAGCAAGTACTAGTGCATCGGCTTCAGC
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                                                                                                               AAGCACCAGTGCGTCGGCTTCAGCATCAACGAGTGCCTCAGCCTCAGCAAGTATCTCAGC
                                                                                                                                                                       aSer---SerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLy
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                                                Percent Similarity:
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Query Match:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
APPLICANT: Charles Kunsch
TITLE OF INVENTION: Strep
                                                                                                                                                                                                                                                                     TELEFAX: (301) 309-85
INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                  FILING DATE:
ATTORNEY/AGENT INFORMATION:
NAME: Brookes, A. Anders
REGISTRATION NUMBER: 36,373
REFERENCE/DOCKET NUMBER: PB34
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OPERATING SYSTEM: MSDO
SOFTWARE: ASCII Text
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                     CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM: MEDIUM TYPE: Diskett
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9410 Key West Avenue
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aGlyValGlyLysLeuGlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAl
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; ORGANISM: Mycobacterium tuberculosis
US-09-17/7-349-2
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CURRENT APPLICATION NUMBER: US/09/177,349
CURRENT FILING DATE: 1998-10-23
NUMBER OF SEQ ID NOS: 14
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APPLIÇÂNT: Jacobs Jr., William
TITLE OF INVENTION: inib, iniA
TITLE OF INVENTION: OF USE
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APPLICANT: VENTER, John C.
TITLE OF INVENTION: DNA SEQUENCES FOR STRAIN
TITLE OF INVENTION: TUBERCULOSIS
FILE REFERENCE: 24366-2007.00
CURRENT APPLICATION NUMBER: US/09/103,840A
CURRENT FILING DATE: 198-06-24
NUMBER OF SEQ ID NOS: 2
SOFTWARE: PATENTIN VET. 2.1
SEQ ID NO 2
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                                                            1632464 GCCGGCCCCGCCCCGCCCGCCCGCCGTTCTGGCCGGTGCCGGATTCGCCCGC 1632523
                                                                                                                                            1632425 ACCGGTCCCCGCTCGCCCCGAAGTCTCCGCCCCGGCC-----
                                                                                                                                                                                                                                                                                                                                                                                             1632272 CAAACCGCCGGGCCCGCCTTGGCCGCCGTTACCGCCTTG-----
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OTHER INFORMATION: "n" bases at various
OTHER INFORMATION: represent a, t, c or
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TYPE: DNA
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                     165
                                                                                                                                                                              125 PheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeu 144
                                                                                                                                                                                                                                                                  109 LeuAspArgLeu----
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                                                                                                                                                                                                                                                                                                                                                                                                                                      76
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    56 AlaHisLysLeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsn 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      36 SerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrLeuThrAspHisValPheAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      20 ThralaSerAspalaSerLeuAlaSerSerSerValArgSerValSer-----
GlnValGlyThrLysMetMetAspArgAlaThrGlyAspLeuH1sTyrLeuSerAlaSer 184
                                                                                                 ProAlaProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAsp
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WHITE, Owen R.
                                                                                                                                                                                                                                                                                                           247
132.50
34.23%
23.65%
5.49%
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                                                                                                                                                                                                                                                                  -----AlaThrThrThrSerGlyAlaLeuArgAlaThrPro
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Matches:
Conservative:
Mismatches:
Indels:
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APPLICANT: Deboff, Bradley S. APPLICANT: SUNDONS, Stuart A. APPLICANT: STUDEN, STUDENT SYNTHASE GENES APPLICANT: SUTCO, Kimborly L. APPLICANT: SUTCO, Kimborly C. APPLICANTON MANAPOLIS COMMUTEN: USA APPLICANTON MANAPOLIS SUTCO, KIMBOR, S. APPLICANTON MANAPOLIS COMMUTEN: LINGUAGE, S. APPLICANTON MANAPOLIS APPLICANTON MANAPOLIS SUTCO, APPLICANTON MANAPOLIS APPLICANTON	7 GGGGCTGGCCCCGGCGCGCGCACCGATCGTGGAGCCGGCTCCGCCGGTGCCTCC 1633396  Db 18126  27 Application US/08804227C	33336 US-09-825- Qy 12	Qy 409 IleGlnAspThrValLysSerThrAlaSerSerThrThrGlyTyrValAlaAspGln 427    Cores:	Qy 375 ValSerGlnLeuThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThr 393 : FARTURE:	Qy       335 LeuValSerAlaSerSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGly       354       ; NAME/KEY:         Db       1632986 CTTGCCGCCGTCGGGTGCCCCTGCCCCCAGGCCGTTAAGGCCGGTGGCCGGT       1633045       ; FEATURE:         Qy       355 ValGlyLysLeuGlnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAlaAla       374       ; LOCATION:         Db       1633046       ; FEATURE:       ; FEATURE:         Db       1633046       ; FEATURE:	314 2 1632925 334 2 1632985	CY 2/5 LeuvalleuglyLeulySasplySGIUFTOLYSAIGGINLEUSERGIUGLUASIASPTED 294    Filling	1632629 GCCGGCCCGCGCACGGTGGCGTTGCCGCCGTTGCCGCCCGTTGCCGCCCGTTGCCGCC	1632544
	ArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAspTyrLeuThrAsp	414-7 (1-486) x US-08-804-227C-7 (1-44377)  ValThrAlaThrAspSerPheArgThrAlaSerAspAlaSerLeuAlaSerSerSerVal:  :::     ::		CDS 31329. CDS 36155.	CON: 35014002  EY: CDS CON: 1404620036	NN FOR SEQ ID NO: 7: [CHARACTERISTICS: [1: 44377 base pairs nucleic acid DEDNESS: single DGY: linear GY: Linear GYTYPE: DNA (genomic)	JAIL: FEDITIALY 21, 199/ FICATION: 435 (7AGENT INFORMATION: Plant, Thomas, G. RATION NUMBER: 35,784 ENCE/DOCKET NUMBER: X-8231 UNICATION LINFORMATION: IONE: 317-276-2459	READABLE FORM: TYPE: Floppy disk TER: IBM Compatible YER: MS-DOS TEXT ASCI(DOS) Text only APPLICATION DATA: ATION NUMBER: US/08/804	IT: ROSTECK, PAUL R., Jr.  IT: ROSTECK, PAUL R., Jr.  IT: SOUTEN R., VI.  IT: SOUTEN R

LeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSe ::: :::
CACCCTGGGCAGCGCGGGCAGGCCGGCAACGCCTTCATGGACGCGCT
-AlaSerTyrSerGlyAla
LysalaglnLeuSerGluGluAsnAspTrp-LeuGluAlaTyrLysAlaIleLysSe 
GlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLysGluPro
ValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeuSerVal      GTG
AlaLeuAlaSerArgProAlaValGlnGlyAlaValAspLeuGly
ValalaValGlnThrTyrSerAlaArgAsnAlaValArgThrValLeuAlaPro
SerProSerLeuAlaArgGlnValLeuAspThrGly :::    ::
VallysargHis
GlyAspLeuHisTyrLeuSerAlaSerProAspArgLeuHisAspAlaMetAlaAlaSer 
SerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAspArgAlaThr :::
LeuLysProLeuThrProLeuTle
AlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAlaPro
LeuAlaThrThrThrSerGlyAlaLeuArgAlaThrProPheAlaMet :::                  TTCACCCTGGTGGACGTCGACGGCACCCAGGCGTCGCTGCGGGGCCCTGCCCGGTCTGCTG
ProAlaThrIleAlaAspThrPheAlaLysAlaGluLysLeuAspArg
IleThralaLeuIleGluThrargAlaSerArgLeuHisPheGluGlyGluThr::
LysLeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGln
ACCGAAACGGCCCCGACGTCGACGTCCCTACGGCCGCGCGCCCCCCGCACAGCCCCCT

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RESULT 11 US-08-804-198-1 Sequence 1, Application US/08804198 Patent No. 5945320 GENERAL INFORMATION: APPLICANT: KUNSTOSS, Stuart A. APPLICANT: KUNSTOSS, STUART A. APPLICANT: ROY, NAGARAJA R. APPLICANT: ROSTECK, PAUL R., Jr. TITLE OF INVENTION: PLATENOLIDE SYNTHASE GENE NUMBER OF SEQUENCES: 6 CORRESSEE: PAUL R. CANTRELL 1138 STREET: LILLY CORPORATE CENTER CITY: INDIANAPOLIS STATE: IN COUNTRY: USA ZIP: 46285 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk COMPUTER MACINTOSh OPERATING SYSTEM: MACINTOSh 7.0 SOFTWARE: MICROSOFT WORD DATA: APPLICATION NUMBER: US/08/804,198 FILING DATE: APPLICATION: 435 CLASSIFICATION: 435 ATTORNEY/AGENT INFORMATION: NAME: CANTRELL, PAUL R. REGISTRATION NUMBER: 36,470	/ 467IleGluGluGlyGlyThrAlaAlaSerProSerGluIlePro 480 :::               :::    :::    19727 CGGGCTGGAGGCGGCCGGTCCAGCGGAACCGGCGGAGGTCCCG 19772	/ 459 466 	442 alleThrHisThrGlyAlaSerLeuArgAsnThrValAsnAsnLeuArg 458	/ 422 yTyrValAlaAspGlnThrValLysLeuAlaLysThrValLysAspMetGlyGlyGluAl 442	/ 406GluSerPheIleGlnAspThrValLysSerThrAlaSerSerThrThrGl 422 ::::::              :::::::::::::::::	404 sAla	394 aAlaLeuThrThr	380 nLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAl	360 uMetAlaThrLysAsnIleThrAspProAlaThrLysAlaAlaValSerGlnLeuThrAs 380	7 340 rLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeuGlnGl 360 ::: :::::	19154 CGGGGTGGGTCTCGCCACCGGACTGGACGGAGCGGACGCGGCGCGCG

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Best Local Similarity:
Query Match:
DB:
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TELECOMMUNICATION INFORMATION:
TELEPHONE: 317-276-3885
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 44377 base pairs
                                                                                                                                     18411
                                                                                                                                                                                                                                                                                                                                 18246 ACAAGCCCCCGCGTGGACACCCGCACGGGAGCCCGCACCGCTGAC-----GGCCCCCGG 18299
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                18126 GACGAGGTGCGACGGTGCGCCGGACCCTCGAAGCCGTACAGGCCCGCCTCGCCGAC
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NAME/KEY:
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                                                                                                                                                                                                                                     96
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LOCATION:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LENGTH: 44377 base pairs
TYPE: nucleic acid
STRANDEDNESS: single
TOPOLOGY: linear
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                                  LeuLysProLeuThrProLeuIle------
                                                                                              AlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAlaPro 147
                                                                                                                                                    LeuAlaThrThr-----ThrSerGlyAlaLeuArgAlaThrProPheAlaMet 127
                                                                                                                                                                                                   CCCGCGGGTGCCGCTCTCTGGGGGCTCCTCCGGGTCGCCCAGGCCGAACAGCCCGGCCGC 18410
                                                                                                                                                                                                                                                                                               IleThrAlaLeuIleGluThrArgAlaSerArgLeuHisPheGluGly-----GluThr 95
                                                                                                                                  TTCACCCTGGTGGACGTCGACGGCACCCAGGCGTCGCTGCCGGGCCCTGCCCGGTCTGCTG 18470
                                                                                                                                                                                                                                  ProAlaThrIleAla----
                                                                                                                                                                                                                                                                                                                                                         LysLeuProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGln 77
                                                                                                                                                                                                                                                                                                                                                                                                                                     HisVal----
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CTCGTCCCGGTGGCCGACCCCGTCCCCCACGGCGGCGGCACGGCGGCCGACGGGACGGGT 18584
                                                                  GCCACG-----GATGCCGGCCAGTCGGCCGTGCGCGACGTGTCACCGTTCCCGCGC 18524
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350..14002
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31329..36071
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20110..31284
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130.50
33.77%
21.92%
5.41%
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Matches:
Conservative:
Mismatches:
Indels:
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                                  ---- 155
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442	$y \\ Tyr \\ Val \\ A \\ la \\ A \\ Sp \\ C \\ In Thr \\ Val \\ Lys \\ A \\ Sp \\ Met \\ G \\ Ly \\ G \\ Ly \\ G \\ Lu \\ A \\ Lys \\ Thr \\ Val \\ Lys \\ A \\ Sp \\ Met \\ G \\ Ly \\ G \\ Ly \\ G \\ Lu \\ A \\ Ly \\ Sp \\ Met \\ G \\ Ly \\ G \\ Ly \\ Sp \\ Met \\ G \\ Ly \\ G \\ Ly \\ Sp \\ Met \\ G \\ Ly \\ G \\ Ly \\ Sp \\ Met \\ G \\ Ly \\ G \\ Ly \\ Sp \\ Met \\ G \\ Ly \\ Sp \\ Met \\ G \\ Ly \\ Sp \\ Met \\ G \\ Ly \\ G \\ Ly \\ Sp \\ Met \\ G \\ Ly \\ G \\ Ly \\ Sp \\ Met \\ G \\ Ly \\ Sp \\ Met \\ Sp \\ Sp \\ Met \\ Sp \\ Met$	422	Qγ
19552	CCTGGTGCGACCGAGGTCGCGCGGTGCTCG	19493	В
422	erPheIleGlnAspThrValLysSe	406	Qy
19492	TGCCCCCGCCCGGCCGACGCCGGCGGGACGCTGGCCGCGCGCG	19433	Дb
405	sAla	404	Qy
404 19432	aAlaLeuThrThrAspProAlaValLysLy	394 19373	Дb
394 19372	nLeuAlaGIYSerAlaAlaVaI	19313	Db Qy
19312	:::        GAGCCGGCCCTGCTGCCCGTGCGGCTCGACCTGCGC	19259	Db
380	${\tt uMetalaThrLysAsnIleThrAspProAlaThrLysAlaAlaValSerGlnLeuThrAs}$	360	Qy
360 19258	rLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeuGlnGl:::	. 340 19199	Оу
19198	LeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSe :::  :      	322 19154	Db Qy
19153	GGCCGCCGGCGGTGCGCCGCGGCACCCCGCGCTGTCGCTCGGCTGGGGCTGGTGGTC	19094	DЬ
321	uAsnAlaGlyLysArgMetAlaGlyLeuPro	311	Оy
311 19093	rAlaSerTyrSerGlyAlaAlaLe	303 19034	Оy
303 19033	LysAlaGlnLeuSerGluGluAsnAspTrp-LeuGluAlaTyrLysAlaIleLysSe :::    ::: ::::::::::::::::::::::::::	18974	Дb
18973		18915	Db !
284	GlnSerArqAspHisGlnArqGlyGlyAlaLeuValLeuGlyLeuLysAspLysGluPro	265	04 5
64	ValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeuSerVal	245	P 29
18902	TCCCCCGACGACCACCCCCTGACCTGCGTGCTCCACCACCGCCGGGGTGCTCCAACGACGCC	18843	B 5
18842	GTCGCCGTACGGGCCTGTGACGTCACGGACGCCCCTGCGCCCCTGCCCCCCCC		Q D
29	Pr	l N	. 0
18782	GTCCCGACGCCCGGCGTCGACTGGTCGCCGAGTTGACCGAGTCGGGTGCCGAG	18723	Db
211	SerProSerLeuAlaArgGlnValLeuAspThrGly	200	Qу
00 (		18663	B 8
	APTQH   M	196	ک ا
195 18662	GlyAspLeuHisTyrLeuSerAlaSerProAspArgLeuHisAspAlaMetAlaAlaSer	176 18645	D 42
175 18644	SerglyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAspArgAlaThr::::   :::   :::::       :::::	156 18585	Qy Db

Alignment Scores:  Pred. No.:  129.00  Matches:  Score:  129.00  Matches:  96  Percent Similarity:  19.518  Best Local Similarity:  19.518  Us-09-825-414-7 (1-486) x US-08-961-527-363 (1-4483)  Qy  5 ArgargValGlnGlnProProvalThrAlaThrAspSerPheArgThrAlaSerAspAla 24	HATTONEY/AGENT INFORMATION:  NAME: Brookes, A. Anders  REGISTRATION NUMBER: 36,373  REFERENCE/DOCKET NUMBER: PB340P1  TELECOMMUNICATION INFORMATION:  TELEPHONE: (301) 309-8504  TELEFRAX: (301) 309-8512  INFORMATION FOR SEO ID NO: 363:  SEQUENCE CHARACTERISTICS:  SEQUENCE CHARACTERISTICS:  LENGTH: 4483 base pairs  TYPE: nucleic acid  STRANDEDNESS: double  TOPOLOGY: linear		HE HED ONE 32	:::
307 2262 327 2322 346 2382 2382 366 2442	Qy 232 aSerArgProAla	185 ProAspArgLeuHisAspAlaMet	Oy 105 LysalaGluLysLeuAspargLeuAlaThrThrSerGlyAlaLeuArgAlaThrPro  1663 TCAACGAGTGCATCAGCATCAACAAGTGCTTCAGCTTCAGCAAGTACCAGTGCG  Db 1663 TCAACGAGTGCATCAGCATCAACAAGTGCTTCAGCTTCAGCAAGTACCAGTGCG  Qy 125 PheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeu	
LaglyLeuProLeuAspMetAlaThras 327    CaTCAGTCTCAGCAGCAGCAGCTGCGTC 2321    LaserSerLeuThrGlnAsnGlyLe 346			LysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeuArgAlaThrPro 124  TCAACGAGTGCATCAGCTTCAGCATCAACAAGTGCTTCAGCTTCAGCAAGTACCAGTGCG 1722  PheAlaMetAlaSerLeuLeuGlnTymetGlnProAlaIleAsnLysGlyAspTrpLeu 144	

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Sequence 19, Application US/09320878A

Patent No. 6117659

Patent No. 6117659

Patent No. 6117659

Patent No. 6117659

APPLICANT: BETLACH, Melanie C.
APPLICANT: BETLACH, Melanie C.
APPLICANT: BETLACH, Melanie C.
APPLICANT: BETLACH, MATY C.
APPLICANT: TANO, L1

TITLE OF INVENTION: RECOMBINANT NARBONOLIDE POLYKETIDE SYNTHASE
FILE REFERENCE: 300622002120

CURRENT APPLICATION NUMBER: US/09/320,878A

CURRENT APPLICATION NUMBER: CIP OF 09/141,908

EARLIER APPLICATION NUMBER: CIP OF 09/141,908

EARLIER APPLICATION NUMBER: CIP OF 09/073,538

EARLIER APPLICATION NUMBER: CIP OF 09/073,538

EARLIER APPLICATION NUMBER: CIP OF 08/846,247

EARLIER FILING DATE: 1998-05-06

EARLIER FILING DATE: 1999-02-08

EARLIER APPLICATION NUMBER: 60/10,139

EARLIER APPLICATION NUMBER: 60/10,880

EARLIER APPLICATION NUMBER: 60/10,880

EARLIER FILING DATE: 1998-05-28

EARLIER APPLICATION NUMBER: 60/100,880

EARLIER FILING DATE: 1998-05-28

NUMBER OF SEQ ID NOS: 34

SOFTWARE: DATOATEN UPS O
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Best Local Similarity:
Query Match:
DB:
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; TYPE: DNA
; ORGANISM: Streptomyces venezuelae
US-09-320-878-19
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: PatentIn Ver. 2.0
22153 GGGGCCGGGGTCTCGCCCCGGTCGACGGCCTCCACCAGGTCCGTAAGGTCCGGGAAGGAC 22094
                                                                                           22213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2739 ATCAACAAGTGCCTCGGCTTCAGCAAGCACCAGT 2772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2619 ATCAACGAGTGCATCAGCTTCAGCATCAACAAGTGCTTCAGCTTCAGCAAGTACCAGTGC 2678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2559 GTCAGCCTCAGCGTCGACAAGTGCGTCGGCTTCAGCAAGTACCTCAGCGTCTGAATCAGC
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                           23 AspAlaSerLeu------AlaSerSerSerValArgSerValSerSerAspGlnGln 39
                                                                                                               4 AsnArgArgValGlnGlnProPro---ValThrAlaThrAspSerPheArgThrAlaSer 22
                                                                                    TCGCGGACATGCTCCGGCCCACCGGGGCCGCGGCGGGGCAGGCCACCAGGACGGTCGCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 rGlyAlaSerLeuArgAsnThrValAsnAsnLeuArgGlnArgProAlaArgGluAlaAs 466
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                                                                                                                                                                                                                             0.29
128.50
36.31%
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Matches:
Conservative:
Mismatches:
Indels:
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yLe 346	${\tt rAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyAlaValArgSerLeuValSerAlaSerSerLeuValSerAlaSerSerLeuValSerAlaSerSerLeuValSerAlaSerSerLeuValSerAlaSerAlaSerSerLeuValSerAlaSer$	326	Qy
AGG 21085	GACCGGCGG	21144	ф
aTh 326	LysArgMetAlaGlyLeuProLeuAspMetAla	315	Qy
AGT 21145	CCGCCAGCCAGGGGTGCGTACGGAGGGAGAGGCTCCCCGTGAGCAGGCAG	21204	Db
314		314	Qy
314 GGT 21205	rLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGly	298 21263	ду Дъ
aTy 298    TCG 21264	AspLysGluProLysAlaGlnLeuSerGluGluAsnAsp-TrpLeuGluAlaTy ::::::::::::::::::::::::::::::::::::	281 21323	Qy Db
CAC 21324	GGACTCGTCGCCGCGCGACGGACAGCTGCACACGGACCACGACGACGGGCAGCACACGACGACGGGCAGCA	21383	Db CY
	TCGCCCGGCGTCCTCCGGGTGCGCGTAGAGCCCGAA	21443	p 5
21	GTCGGCGACGGGGGGGGGGGGCCACCACGACACACGGGGGGG	21503	d d
21		21527	0
Ser 218 GGC 21528	SeerLeuAlaArgGlnValLeuAspThrGlyValA	199 21578 216	A dd
2 1	SerAlaSerProAspArgLeuHisAspAlaMetAlaAlaSerValLysAr    :::    :::    GTCGCCACGCCGCAGACACCACGGACGCCCTGGAAGAGGGGGCCGTAGCCGTA	182 21632	ОУ
Leu 181      CTC 21633	MetAspArgAlaHisTyrLeu	17 <u>1</u> 21692	Qу
Met 170 GCC 21693	LeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMet :::             :::::	151 21743	рb
Pro 150      CCC 21744	LeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAlaProLeuLysPro	13h 21802	Дb
Leu 130 ACC 21803	AlaThrThrThrSerGlyAlaLeuArgAlaThrProPheAlaMetAlaSerl	11 <sup>13</sup> 21862	Db dy
Leu 112      CTC 21863	salaGluLysLeuAspAr9    :::  CACCGGCTGCCCGGAGGAGTCGGCGGCG	96 21922	Db , Qy
Thr 95      ACG 21923	AlaGlnIleThrAlaLeuIleGluThrArgAlaSerArgLeuHisPheGluGlyGluThr::::::::::::::::::::::::::::::::::::	76 21982	Дy
Asn 75 ::: TCC 21983	ProProAlaAspSerAlaAspGlyGlnAlaAlaValAspValHisAs	22042	Qу
22043	ArgGlulleAsnAlalleAlaAspTyrLeuTnrAspH18ValrneALaAlaHlsLysLeu 	22093	Db QY

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APPLICANT: TONOUCHI, Naoto
APPLICANT: TSUCHIDA, Takayasu
APPLICANT: TSUCHIDA, Takayasu
APPLICANT: YOSHINAGA, Fumihiro
APPLICANT: YOSHINAGA, Fumihiro
IAPPLICANT: HAYASHI, Takahisa
TITLE OF INVENTION: NOVEL GENE, GROUP OF GENES, AND
FILE REFERENCE: 6537-011-0PCT
CURRENT APPLICATION NUMBER: US/09/147,236A
CURRENT FILING DATE: 1999-04-08
EARLIER APPLICATION NUMBER: PCT/JP97/03633
EARLIER FILING DATE: 1997-10-09
NUMBER OF SEQ ID NOS: 12
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 1
LENGTH: 16836
TYPE: DNA
ORGANISM: Acetobacter xylinum
                                                                                                          Pred. No.:
Score:
                                                   Percent Similarity:
Best Local Similarity:
Query Match:
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                                                                                                                                                                            : OTHER INFORMATION: n at positions 15741 and 15767 may be : OTHER INFORMATION: c US-09-147-236-1
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US-09-825-414-7 (1-486) x US-09-147-236-1 (1-16836)
                                                                                                                                             Alignment Scores:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FEATURE:
NAME/KEY: CDS
LOCATION: (869)..(1891)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NAME/KEY: CDS
LOCATION: (11764)..(12231)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   20966 GAGGCCGTTGGCCCAGGCCTCGGCGAGGGAGGTGGTGAGGCGGTGCTGTCCGCCGTTGTC 20907
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        21025 TAGGTGGGCAGATCGGGGTGGGTGGTCGTG-GTGGGGAAGAGAGAGAGGCCCAGTCGACGGT 20967
                                                                                                                                                                                                                                   FEATURE:
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LOCATION: (12448)..(14652)
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                                                                                                                                                                                                                                                                                                                                           FEATURE:
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LOCATION: (7784)..(11761)
                                                                                                                                                                                                                                                                                                                                                                                                       NAME/KEY: CDS
LOCATION: (5373)..(7778)
                                                                                                                                                                                                                                                                                                                                                                                                                                              FEATURE:
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LOCATION: (3101)..(5368)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                rLysAlaAlaValSerGlnLeuThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTr 391
                                                   0.0852
128.00
39.95%
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                               Length:
Matches:
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323 6475	rGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAsp rGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAsp	307	P &
307 6415	nLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLysSerAlaSerTyrSe	287 6381	Дb
287	gaspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLysGluProLysAlaGl	267	Oy
6380		6332	Db
267	tAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeuSerValGlnSerAr:	247	g
6331		6272	94
247	OAlaLeuAlaSerArgProAlaValGlnGlyAlaValAspLeuGlyValSerMe ::::::	229	Db
6271		6212	Qy
229	-ThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaValArgThrValLeuAlaPr	210	β
6211		6152	δ
209 6151		197 6092	Ф
196	AlaSerProAspArgLeuHisAspAlaMetAlaAlaSerVal	183	ду
6091		6032	Q <b>у</b>
182 6031	GlnValGlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSer:::	165 5975	Фр
164	ProAlaProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAsp	145	94
5974		5921	94
144 5920	PheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLySGlyAspTrpLeu :::         ::	125 5867	Qy
124	LysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeuArgAlaThrPro :::	105	Qу
5866		5808	Дъ
104	AlaSerArgLeuHisPheGluGlyGluThrProAlaThrIleAlaAspThrPheAla::::::	86	ду
5807		5748	Д
85 5747	GlnAlaAlaValAspValHisAsnAlaGlnIleThrAlaLeuIleGluThrArg             cAGGGCGCTGCTACGCTGCAGGGCCTGCAGTTCGGTATTCCGGCCGACCAGCTCGTGACT	5688	PD PO
67 5687	TyrLeuThraspHisValPheAlaAlaHisLysLeuProProAlaAspSerAlaAspGly	48 5628	ОУ
47	SerValArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAsp:::	30	do
5627		5580	Oy
29	ProProValThrAlaThrAspSerPheArgThrAlaSerAspAlaSerLeuAlaSerSer	10	P
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US-09-147-236-10
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APPLICANT: TSUCHIDA, Takayasu
APPLICANT: YSUCHIDA, Takayasu
APPLICANT: YOSHINAGA, Fumihiro
APPLICANT: TAHARA, Naoki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 10
LENGTH: 16836
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence 10, Application US/09147236A Patent No. 6316251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: HAYASHI, Takahisa
TITLE OF INVENTION: NOVEL GENE, GROUP OF GENES, AND NOVEL BETA-GLUCOSIDASE
FILE REFERENCE: 6537-011-0PCT
CURRENT APPLICATION NUMBER: US/09/147,236A
CURRENT FILING DATE: 1999-04-08
EARLIER APPLICATION NUMBER: PCT/JP97/03633
EARLIER FILING DATE: 1997-10-09
NUMBER OF SEQ ID NOS: 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LENGTH: 16
TYPE: DNA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ORGANISM: Acetobacter xylinum FEATURE: FEATURE: NAME/KEY: CDS LOCATION: (1891)..(2922)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FEATURE: OTHER INFORMATION: Nucleotide sequence is the same as SEQ ID NO:1
         5867
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      105
                                   125 PheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeu 144
                                                                                                                                                                         86 AlaSerArgLeuHisPheGluGlyGlu---ThrProAlaThrIleAlaAspThrPheAla 104
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TACATTTGGGCCGCTTTCGTTTGATATCAACCCCATCTTCTTCATCAG-----TGGCAA 5920
                                                                                                                                                                                                                                                    GlnAlaAlaValAspValHisAsnAlaGln-----IleThrAlaLeuIleGluThrArg
                                                                                                            LysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeuArgAlaThrPro 124
                                                                                                                                                                                                                      CAGGGCGCTGCTACGCTGCAGGCCTGCAGTTCGGTATTCCGGCCGACCAGCTCGTGACT 5747
                                                                                                                                                                                                                                                                                           GTGGCGACGGTGCATACATATTCCCTCAGGGAACTTGGTGCGCAGAGTGCCCTCAAAATG
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                                                                          GT-CACGATCACGCTGAACGAACAGTTCATCGGCACGCTGCGGCCTGACCCCACACCCC
                                                                                                                                               TCGGCGCGCTTGTCGTGTCGGGTGCGATGTCGCCCAGCCTCCAGCCTGACACCAGCGCG
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Result
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-DB-Published_Applications_NA -QFMT=fastap -SUFETIX-p2n.rnpb -MINMATCH-0.1
-LOOPELT-0 -LOOPEXT-0 -UNITS-bits -START-1 -END--1 :MATRIX-blosum62
-TRANS-human40.cdi -LIST-45 -DOCALIGN-200 -THK_SCORE-pct -THR_MAX-100
-THR_MIN-0 -ALIGN-15 -MODE-LOCAL -OUTFMT-pto -NORM-ext -HEAPSIZE-500 -MINLEN-0
-MAXLEN-200000000 -USER-US09825414_@CGN_1_1_46_@runat_28012003_161742_26139
-NCPU-6 -ICPU-3 -NO_XLPXY -NO_MMAP -LARGEQUERY -NEG_SCORES-0 -WAIT -LONGLOG
-DEV_TIMEOUT-120 -WARN_TIMEOUT-30 -THREADS-1 -XGAPOP-10 -XGAPEXT-0.5 -FGAPOP-6
-FGAPEXT-7 -YGAPOP-10 -YGAPEXT-0.5 -DELOP-6 -DELEXT-7
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## ALIGNMENTS

RESULT 1 US-09-825-414-6

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; TYPE: DNA
; ORGANISM: Pseudomonas syringae
US-09-825-414-6
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APPLICANT. CONTROL OF SENERAL INFORMATION:
                                                                                                       SEQ ID
                                                                                                                                            APPLICANT: Charkowski, Amy O.

TITLE OF INVENTION: DNA MOLECULES AND POLYPEPTIDES OF PSEUDOMONAS SYRINGAE
TITLE OF INVENTION: HRP PATHOGENICITY ISLAND AND THEIR USES
FILE REFERENCE: 1960/3243

CURRENT APPLICATION NUMBER: US/09/825,414

CURRENT FILING DATE: 2001-04-03
PRIOR APPLICATION NUMBER: 60/194,160
PRIOR FILING DATE: 2000-04-03
PRIOR APPLICATION NUMBER: 60/224,604
PRIOR FILING DATE: 2000-08-11
PRIOR APPLICATION NUMBER: 60/249,548
PRIOR FILING DATE: 2000-11-17
NUMBER: OS: 91
                                                                                                                            SOFTWARE: PatentIn Ver. 2.1
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APPLICANT: Alfano, James R.
APPLICANT: Charkowski, Amy
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NO
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Alignment Scores:

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                                                                                                      ProSerLeuAlaArgGlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArg
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                         GATAAAGAGCCCAAGGCTCAACTGAGCGAAGAAAACGACTGGCTCGAGGCTTATAAAGCA
                                                                              GTGGACCTTGGTGTATCGATGGCGGGTGGTCTGGCTGCCAACGCAGGCTTTGGCAACCGC
                                                                                    ValAspLeuGlyValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArg
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                                 AspLysGluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAla
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APPLICANT: COLLMET, Alan
APPLICANT: Alfano, James R.
APPLICANT: Alfano, James R.
APPLICANT: Alfano, James R.
APPLICANT: Charkowski, Amy O.
TITLE OF INVENTION: DNA MOLECULES AND POLYPE
TITLE OF INVENTION: HRP PATHOGENICITY ISLAN
FILLE PEFERENCE: 19603/3243
CURRENT APPLICATION NUMBER: US/09/825,414
CURRENT FILING DATE: 2001-04-03
PRIOR APPLICATION NUMBER: 60/144,160
PRIOR PILING DATE: 2000-08-11
PRIOR APPLICATION NUMBER: 60/224,604
PRIOR FILING DATE: 2000-11-17
NUMBER OF SEQ ID NOS: 91
SOFTWARE: PATENTIN VET. 2.1
SEQ ID NO 1
LENGTH: 30365
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US-09-825-414-1/c
; Sequence 1, Application US
; Patent No. US20020083489A1
; GENERAL INFORMATION:
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NAME/REY: unsure
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                                           CTGAGCGCCTCGCCGGACAGGCTCCACGATGCGATGGCCGCTTCGGTGAAGCGCCACTCG
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                       ProLeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSer
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              CCACTGGATATGGCGACCGACGCAATGGGTGCGGTAAGAAGCCTGGTGTCAGCGTCCAGC
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AlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerSerAspGlnGlnArg

MetHisIleAsnArgArgValGlnGlnProProValThrAlaThrAspSerPheArgThr 20

ATGCACATCAACCAATCCGCCCAACAACCGCCTGGCGTTGCAATGGAGAGTTTTCGGACA

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GENERAL INFORMATION:
GENERAL INFORMATION:
APPLICANT: COllmer, Alan
APPLICANT: Collmer, Alan
APPLICANT: Alfano, James R.
APPLICANT: Alfano, James R.
APPLICANT: Charkowski, Amy O.
TITLE OF INVENTION: DNA MOLECULES AND POLYPEPTIDES OF PSEUDOMONAS SYR:
TITLE OF INVENTION: HRP PATHOGENICITY ISLAND AND THEIR USES
FILE REFERENCE: 19603/3243
CURRENT APPLICATION NUMBER: US/09/825,414
CURRENT FILING DATE: 2001-04-03
PRIOR APPLICATION NUMBER: 60/194,160
PRIOR FILING DATE: 2000-08-11
PRIOR APPLICATION NUMBER: 60/224,604
PRIOR APPLICATION NUMBER: 60/224,504
PRIOR FILING DATE: 2000-08-11
PRIOR APPLICATION NUMBER: 60/224,548
PRIOR APPLICATION NUMBER: 60/249,548
PRIOR FILING DATE: 2000-11-17
NUMBER OF SQ ID NOS: 91
SOFTWARE: Patentin Ver. 2.1
                                                              Percent Similarity:
Best Local Similarity:
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US-09-825-414-7 (1-486) x US-09-825-414-65 (1-1464)
                                                Query Match:
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                                                                                                                                                                 US-09-825-414-65
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                                                                                                                                                                                                                               SEQ ID NO 65
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                                                                                                                                                                              TYPE: DNA
ORGANISM: Pseudomonas
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                                                              AspLysGluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAla
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LeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThrThrAspPro
                          GATAAAGAGCCCCAAGGCCGCGTTGAGTGAAGAAACTGATTGGCTTGATGCTTACAAAGCG
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; NUMBER OF SEQ ID NOS: 83
; SOFTWARE: FastSEQ for Windows VG
; SEQ ID NO 27
; LENGTH: 4645
; TYPE DNA
; ORGANISM: Lactobacillus rhamnos
US-09-971-536-27
                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Holland, Ross
APPLICANT: O'Toole, Paul
APPLICANT: Reid, Julian
APPLICANT: Coolbear, Timothy
TITLE OF INVENTION: Lactobacillus rhamnosus Polynuclec
TITLE OF INVENTION: Using Them
FILE REFERENCE: 1043c2
CURRENT APPLICATION NUMBER: US/09/971,536
CURRENT APPLICATION NUMBER: US. No. US20020159976A1 09,
PRIOR FILING DATE: 2000-08-08
PRIOR FILING DATE: 2000-01-28
PRIOR APPLICATION NUMBER: U.S. No. US20020159976A1 09,
PRIOR APPLICATION NUMBER: U.S. No. US20020159976A1 09,
PRIOR APPLICATION NUMBER: U.S. No. US20020159976A1 09,
PRIOR APPLICATION NUMBER: PCT/NZ01/00160
PRIOR APPLICATION NUMBER: PCT/NZ01/00160
PRIOR FILING DATE: 2001-08-08
PRIOR FILING DATE: 2001-08-08
                                                                                                                                                                                                       Alignment
Pred. No
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US-09-971-536-27
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APPLICANT: GL
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                                                                        ThrAlaThrAspSerPheArgThrAla-----SerAspAlaSerLeuAlaSerSer---
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 GCTCATCAGGCAGGCTCCAGCGCCAGTGACGCTGTCGGTCAGTCCGGCAGTGCAGCCCAA
                                                        ACTGCAACATCTGCGTATGCTAGTGCTGCAAGTTCGAGTGCCAGTGAAGCCGGTTCATAT
                                                                                                                                                                                                                                      Scores:
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Dekker, James
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Bloksberg, Leonard
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                           SerValArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAsp
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                                                 331 aValArgSerLeuValSerAlaSerSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGl 351
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                                                                                                                                                                                                                                                                                          uGluAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLy
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TGCTAAGAGCGCTGAAAGTCAAGCAAGCAGTGCCGCCAGTGCTGCTGCT---
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NUMBER OF SEQ ID NOS: 46
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 21
LENGTH: 1801
TYPE: DNA
ORGANISM: Artificial Sequence
FEATURE:
Percent Similarity:
Best Local Similarity:
Query Match:
                                                                                                                                    ; NAME/KEY: CDS
; LOCATION: (1)..(1800)
US-09-287-849-21
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                                                                                             Alignment Scores:
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                                                                                                                                                                                                                                                                                                                                                                                                                                          TITLE OF INVENTION: Fusion Protiens of Mycobacterium tuberculosis Antigens
FILTE OF INVENTION: and Their Uses
FILE REFERENCE: 014058-09020US
CURRENT APPLICATION NUMBER: US/09/287,849
CURRENT FILING DATE: 1999-04-07
PRIOR APPLICATION NUMBER: US 08/818,112
PRIOR FILING DATE: 1997-03-13
PRIOR APPLICATION NUMBER: US 08/942,578
PRIOR APPLICATION NUMBER: US 08/942,578
PRIOR FILING DATE: 1997-10-01
PRIOR FILING DATE: 1997-10-01
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
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                                                                                                                                                                                                                                                                                                                                                                                      PRIOR APPLICATION NUMBER: US PRIOR FILING DATE: 1998-04-07 PRIOR APPLICATION NUMBER: US
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Campos-Neto, Antonio
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Dillon, Davin C.
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143.00
34.45%
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                                                      Length:
Matches:
Mismatches:
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340	321 ProLeuAspMetAlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSer	Qy
1098	1039 CCGCTGACCAGCCTGACCAGCGCCGGGAAAGAGGGCCCGGGCAGATGCTGGGCGGGC	Db 1
320	TyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeu	Qy
1038	979 TCGGTGCCGCAGGCCTGGGCCGCCGACCAGGCAGTCACCCCGGCGGCGGCGCGCGC	Db
305	nAspTrpLeuGluAlaTyrLysAlaIleLysSerAlaSe	Qy
978	976TTG	DЬ
288	269 HisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLysGluProLysAlaGlnLeu	Qy
975	931 GGTGGGCTGGCCAACTTGGGTCGGGCGGCCTCGGTCGGTCG	DЬ
268	gAsp	Qy
930	:	Db
248	lSerMetAla	Qy
228 885	209 AspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaValArgThrValLeuAla            :::   :::           853GCCGTGCAAACCGCGGCGCAAAACGGGGTCCGG	Qy Db
852		ДЬ
208	189 HisAspAlaMetAlaAlaSerValLysArgHisSerProSerLeuAlaArgGlnValLeu	Qy
9	:::	Db
188	gLeu	Qy
741		Db
168		Qy
æ	111::: :::	Db
154		Qy
636	77 GCCGCCGCGGTCGAGGAGGCCTCCGACACCGCGGCGAACCAGTTGAACAATGTG	Db
134	121	Qy
576	523 CTGCCGTTCGAGGAGGCGCCGGAGATGACCAGCGGGGTGGGCTCCTCGAGCAG	рb
120	104 AlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeu	Qy
522	463 CAAGACGCCGCGGTTTTGGCTACGCCGCGGCGACGGCGACGGCGACGTTG	Db
103	he	Qy
462	င္ပ	Db
83	eGlu	Qy
402	343 CCCCGCCGGTGATCGCCGAGAACCGTGCTGAACTGATGATTCTGATAGCGACCAACCTC	ДĎ
69	roProAlaAspSerAlaAspGlyGlnAla	Qy
342	304GCTGCGCCGCCTACGAGACGCCTATGGGCTGACGGTG	Db
59	AlaHisLysLeu	Qy
303	262 ACCGCGGGCAGGCCGAGCTGACCGCCGCCCAGGTCCGGGTT	당
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ING DATE: 1998-12-31 SEQ ID NOS: 46 PatentIn Ver. 2.1 1 2287 A A : Artificial Sequence: Artificial Sequence FORMATION: Descriptic FORMATION: Drotein Re FORMATION: fusion) : modified_base : (30)	ULT 6  09-287-849-1  09-287-849-1  equence 1, Application US/09287849  atent No. US2002009459A1  ENERAL INFORMATION:  ENERAL CAMPOS Neto, Mark  APPLICANT:  Cofixa Corporation  ENTILE OF INVENTION:  FUSION Protiens of Mycobacterium tuberculosis Antigens  FILLE FERENCE:  104058-009020US  FULLE REFERENCE:  104058-009020US  FULLE REFERENCE:  104058-009020US  FULLE REFILING DATE:  1997-03-13  PRIOR APPLICATION NUMBER:  US 08/9112  PRIOR APPLICATION NUMBER:  US 08/925,197  PRIOR FILLING DATE:  1997-10-01  PRIOR FILLING DATE:  1998-02-18  PRIOR APPLICATION NUMBER:  US 09/025,197  PRIOR APPLICATION NUMBER:  US 09/025,197	ThrHisThrGlyAlaSerLeuArg 451           :::    GCTCATGGCGCCATGATCCGC 1509	ValAlaAspGlnThrValLysLeuAlaLysThrValLysAspMetGlyGlyGluAlaIle 443	LysalaGluSerPheIleGlnAspThrValLysSerThrAlaSerSerThrThrGlyTyr 423	SerAlaAlaValPheAlaGlyTrpThrThrAlaAlaLeuThrThrAspProAlaValLys 403 ::: GCACCGCCACCTCAGCGCGCTGCCATGGCCGCGCAATTGCAAGCTGTGCCG 1392	AlaThrLysAlaAlaValSerGlnLeuThrAsnLeuAlaGly 383			LeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyVal 355	CCGGTGGGG1107

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---GCGATGAGCTCGCTGGGCAGCTCGCTGGGTTCTTCGGGTCTGGGC-------
                      ProAlaLeuAlaSerArgProAlaValGlnGlyAlaValAspLeuGlyValSerMetAla 248
                                                     GlnProAlaIleAsnLysGlyAspTrpLeuProAlaProLeuLysProLeuThrProLeu 154
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                                                                                                       ACCAACACCTTGAGCTCGATGTTGAAGGGCTTTGCTCCGGCGGCGGCCCGCCAG-----
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; TYPE: DNA
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PRIOR FILING DATE: 1998-10-23
NUMBER OF SEQ ID NOS: 14
SOFTWARE: Patentin Ver. 2.0
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                                                                                                          uSerValGlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLy
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sSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLe
                                                         sGluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLy 302
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RESULT 8  US-09-815-242-4584  Sequence 4584, Application U Patent No. US20020061569A1  GENERAL INFORMATION: APPLICANT: Haselbeck, Rober APPLICANT: Oblsen, Kari L. APPLICANT: Zyskind, Judith APPLICANT: Zyskind, Judith APPLICANT: Trawick, John D APPLICANT: Yamamoto, Rober APPLICANT: Yamamoto, Rober TITLE OF INVENTION: Identif TITLE OF INVENTION: Prokar FILE REFERENCE: ELITRA.011A CURRENT APPLICATION NUMBER: 6 PRIOR FILING DATE: 2000-05- PRIOR APPLICATION NUMBER: 6 PRIOR FILING DATE: 2000-11- PRIOR APPLICATION NUMBER: 6 PRIOR FILING DATE: 2000-12- PRIOR APPLICATION NUMBER: 6 PRIOR FILING DATE: 2000-11- PRIOR APPLICATION NUMBER: 6 PRIOR FILING DATE: 2000-12- PRIOR FILING DATE: 2001-02- NUMBER OF SEQ ID NOS: 14110-10- NUMBER: 6 PRIOR FILING DATE: 2001-02-	Qy 446 rGlyAlaSerLe	Qy 426 pGlnThrValLy	Qy 406 uSerPheIleGlnAspThr :::         Db 1134 TGGCGTGGTGGCCAAGACC	Qy 386 aValPheAlaGly ::: Db 1077 GTTGGGCTTCGGA	Qy 36b eThraspProala	Qy 358 Db 957 CCAGGCGGGGTT	Qy 356 yLys Db 897 CAATGTCAGCGG	Qy 337 -SerAlaSerSerLeuThrGln :::    Db 837 CCAGGCGGCATCGCTAGCCAG	Qy 322 uAspMetAlaTh ::: Db 778 -CAGATCGGAGT	Db 720 TGGGAGCGCGGC
N: Daniel N: Grant J. Coto, Robert T. Howard N: Howard N	erLeuArgAsnThrValAsn 455 ::    ::     CACTGGGCAGTGTCGACACGGTCAAC 1272	SLeuAlaLySThrValLysAspMetGlyGlyGluAlaIleThrHisTh	nAspThrValLysSerThrAlaSerSerThrThrGlyTyrValAlaAs 	YTrpThrThrAlaAlaLeuThrThrAspProAlaValLysLysAlaGl 	ThrLysAla		GGCCTGACCGGGGTCAGCAGCAACGCAGTGTTGGCTTCCAACGCAAGCGG	erLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGl :::       ::::: rcgcTagccAgATCGGTGTCTCAGCCGGTGGTGGGCTCGGCGGCGTCGG	aThraspAlaMetGlyAlaValArgSerLeuVal	TGGGAGCGCGGCCTATCGGTGCCGGCGTCGGCGGTCGCCTAGGCGCAATGGC
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; ORGANISM: Staphylococcus aureus
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245 ValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeuSerVal 264
                                                                                                                                                                                                                                                                                                                                                                                          988 TTAGTAACATCTAAAAATAACTTACAAAGTTCTGTGAACCAA--------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 901 TCTGACGCTTTAACTAAAGTT------CGTGCTGCACAAACTAAGATAAATGAA 948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100 AlaAspThrPheAlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAla 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                673 GATGGCAGTACTGAAGAAGTACAAGAGTCTATTTTCACAAAAGCGGATAAACGTGAGTTA 732
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    613 ATGCCTACTAATTTAGCTGGTGGTAGCACAACGACGATTCCTGTGACAGTAACTTACAAT 672
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3 IleAsnArgArgValGln---GlnProProValThrAlaThrAspSerPheArgThrAla
||||||
                                                                                                                                   ArgGlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaValArg
                                                                                                                                                                                                                                                                                 GlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSerAlaSerProAsp 186
                                                                                                                                                                                                                                                                                                                                                                                                                  -----TyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAla 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                            GCTAAAGCA-----TTACTTCAAAATAAAGAAGATAATAGCCAA 987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AlaLeuIleGluThrArgAlaSerArgLeuHisPheGluGlyGluThrProAlaThrIle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ATTACGCAGTACAATAATGCA-----ATTCATAATGCGCAACAACAAATCAATACT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ATCACAGCTAAAAATCATTTAGATGATCCAGTGAGTACAGATGGTAAAAAGCCAGGTACA 792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ATTAACAATGCAGTTCAAGTTGCTAATAAACGTACTGCAACGATTAAAAAATGGCACAGCA 612
                                    TCTGTTAAGCAAAGTGCG----AATAGTTTAGATGGTGCAATGGGTAACTTACAAACGGCT
                                                                                                                                                                                                               ArgLeuHis-----AspAlaMetAlaAlaSerValLysArgHisSerProSerLeuAla
                                                                                                                                                                                                                                                  AATGCGAAGAAACGCGAAGCAGAAACT------GAAATAACTGCAGCTCAACGT
                                                                                                                                                                                                                                                                                                                                                      ProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnVal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GCGAAAACAGAAGCGCAA----CAAGTTATTAATAATGAGCGTGCAACACCACAACAAGTT 900
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AspSerAlaAspGlyGlnAlaAlaValAspValHisAsnAlaGln------IleThr 79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AsnAlaIleAlaAspTyrLeuThrAspHisValPheAlaAlaHisLysLeuProProAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -----SerSerAspGlnGlnArgGluIle 42
                                                                                                       CGCAATGATTTAACAAATCAAAATTTCACAAGCTACAAACTTAGCT-----GCTGTTGAA 1236
                                                                                                                                                                             GTTATTGACAATGGTGATGCAACTGCACAACAATTTCAGATGAAAACACTACAGCACAA 118
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131.50
35.34%
22.08%
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Matches:
Conservative:
Mismatches:
Indels:
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	: Xu, H. Howard INVENTION: Identific	APP	
	PPLICANT: Yamamoto, Robert T.	APP	
	PPLICANT: Trawick, John D.	APP	
	LICANT: Wall, Daniel	APPI	٠
	LICANT:	APP	
	APPLICANT: Haselbeck, Robert		
	nt No. US20020061569Al RAL INFORMATION:	Patent   GENERAL	
		RESULT US-09-1	·· □ ઋ
	GACGCAAGTCCGAA	N	Д
	472 ThrAlaAlaSerProSer 477		δ
2088	029 ATGAAAGGCTTAAGAGATAGTATTGCTAACGAAACAACAGTCAAAGCAAGTCAAAACTAT	N	ДĎ
471	alAsnAsnLeuArgGlnArgProAlaArgGluAlaAspIleGluG	·	Qγ
2028	969 GCCAATAGAATTAGAAGACATACAAACTGTTCAAACAAATGGACAAGCATTGAACAATGCA	_	Дb
453	laSer		Qγ
1968	909 GATGCATTAACGCAATTAAATACACCTCAAAAAGCTAAATTAAAAGAACAAGTGGGACAA		дg
441	alLysAspMetGlyGlyG		Qy
1908	849 CAAGAATTAAATGGTGACGAAAGATTACGTGTTGCAAAACAAAACGCCAATACTGCTATT	<u> </u>	dg dg
433	lnThrValLysLeuAlaL		Qγ
1848	89 A	b 17	DЬ
424	412 ThrValLysSerThrAlaSerSerThrThrGlyTyrVal		Qγ
1788	.735 AATGCTTACACAACTAAAGTTACCAATGCTGAACATATTATTAGCGGTACGCCA	L	фa
411	laLeuThrThrAspProAlaValLysLysAlaGluSerPhe		Qγ
1734	675 GCAGATAAGACGATAGCAAGCAGTAAATATGTTAACGCCGATAGCACTAAACAA	ш	망
394	376 SerGlnLeuThrasnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAla		Qy
1674	.618 GTACAACGTAATGCGACTGAACTGAACACGGCAATGGGCACATTAAAACATGCCATC	ш	Db
375	etAla		γQ
1617	558 CAAAAAGATGCATTAAAAGCACAAGCTAATGGTGCTCAACGCGTATCTAATGCACAAGAT	_	dg G
360	345 GlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeuGlnGlu		γQ
1557	1498 AATAATGCGAAACAAGCAGCGATTACAGCAATCAATGGCGCATCTGATTTAAATCAAAAA		дb
344	325 AlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSerLeuThrGlnAsn		Qγ
1497	1447 CTTAATAATGTTAATAGTGCGAAACATGCATTAAATGGTACGCAAAACTTA		Db
324	laGlyLysArgMetAlaGlyLeuProLeuAspMe		Qy
1446	1390ACAATTTTAAATAAACAAACTGGACCGAATACAGCGAAAACTGCAGTCGAACAAGCA		рb
304	285 LysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLysSerAla		Qy
1389	1333 CTAGATGCTGATGAGCAAAAACGTAATGCTAACAATCAAGCTGTATCAAATGCCGAA		Db
284	265 GlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLysGluPro		γo
1332		ш	DD DD

TITLE OF INVENTION: Prokaryotes FILE REFERENCE: ELITRA.011A

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CURRENT APPLICATION NUMBER: 05/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR PPLICATION NUMBER: 60/206,848
PRIOR PPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR FILING DATE: 2000-05-26
PRIOR PRILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR PRILING DATE: 2000-11-27
PRIOR PRILING DATE: 2000-12-23
PRIOR PRILING DATE: 2000-12-27
PRIOR PRILING DATE: 2001-12-7
PRIOR PRILING DATE: 2001-12-7
PRIOR PRILING DATE: 2001-12-7
PRIOR PRILING DATE: 2001-12-7
PRIOR PRILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FASTSEQ for Windows Version 4.0
SOFTWARE: FASTSEQ for Windows Version 4.0
SOFTWARE: FASTSEQ FOR WINDOWS TAXEDS
TYPE: DNA
OFFARTAM: STARBURG SOFTWARE: FASTSEQ
DIA
OFFARTAM: STARBURG SOFTWARE
TYPE: DNA
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Best Local Similarity:
Query Match:
DB:
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; LOCATION: (1)...(17388)
US-09-815-242-8512
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-825-414-7 (1-486) x US-09-815-242-8512 (1-17388)
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                                                                                                                                                                                                                                                 7675
                                                                                                                                                                                                                                                                                                                                                                                                                             7564
                                                                                                                                                                                                                                                                                                                                    7624 ATTACGCAGTACAATAATGCA-----ATTCATAATGCGCAACAACAAATCAATACT 7674
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | IleAsnArgArgValGln---GlnProProValThrAlaThrAspSerPheArgThrAla 21
                                                                     GCTAAAGCA------
                                                                                            LeuArgAlaThrProPheAlaMetAlaSerLeuLeuGln-----
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                                                                                                                                                                                                AlaAspThrPheAlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAla 119
                                                                                                                                                                                                                                              GCGAAAACAGAAGCGCAA----CAAGTTATTAATAATGAGCGTGCAACACCACAACAAGTT 7731
                                                                                                                                                                                                                                                                                    AlaLeuIleGluThrArgAlaSerArgLeuHisPheGluGlyGluThrProAlaThrIle 99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AsnAlaIleAlaAspTyrLeuThrAspHisValPheAlaAlaHisLysLeuProProAla 62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SerAspAlaSerLeuAlaSerSerSerValArgSerVal------
                                                                                                                                                         TCTGACGCTTTAACTAAAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                          ATCACAGCTAAAAATCATTTAGATGATCCAGTGAGTACAGATGGTAAAAAGCCAGGTACA 7623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ------SerSerAspGlnGlnArgGluIle 42
----TyrMetGlnProAlaIleAsnLysGlyAspTrpLeuProAla 146
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                                                                -----TTACTTCAAAATAAAGAAGATAATAGCCAA 7818
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                                                                                                                                                         CGTGCTGCACAAACTAAGATAAATGAA 7779
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125
75
227
139
27
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ATGCA 8859	AATAGATTAGAAGACATACAAACTGTTCAAAC	8800	DЬ
snThr 453	AlaIleThrHisThrGlyAlaSerLeuArgAsnThr	442	Qy
GACAA 8799	GATGCATTAACGCAATTAAATACACCTCAAAAAGCTAAATTAAAAGAACAAGTGGC	8740	Дb
lyGlu 441	ThrValLysAspMetGlyGlyGlu	434	Qy
CTATT 8739	CAAGAATTAAATGGTGACGAAAGATTACGTGTTGCAAAACAAAACGCCAATACTGCT	8680	рb
433	AlaAspGlnThrValLysLeuAlaLys	425	Оу
CGAAA 8679	ACGGTTGTTACAACACCTTCAGAAGTAACAGCTGCAGCTAATCAAGTAAACAGCGCGAAA	8620	망
424	ThrValLysSerThrAlaSerSerThrThrGlyTyrVal	412	Qу
ACGCCA 8619	ATGCTTACACAACTAAAGTTACCAATGCTGAACATATTATTAGCGGTAC	8566	Db
Asp 411	AspProAlaValLysLysAlaGluSerPheIleGln	395	Qy
AACAA 8565	GCAGATAAGACGAATACGTTAGCAAGCAGTAAATATGTTAACGCCGATAGCACTA	8506	Db
hrAla 394	SerGlnLeuThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAla	376	Qy
CCATC 8505	GTACAACGTAATGCGACTGAACTGAACACGGCAATGGGCACATTAAAACATGCCATC	8449	ДЬ
laval 375	La	361	Qу
AAGAT 8448	CAAAAAGATGCATTAAAAGCACAAGCTAATGGTGCTCAACGCGTATCTAATGCACAAGAT	8389	фd
lnGlu 360	GlyLeuAlaLeuAlaGlyGlyPheAlaGlyValGlyLysLeuGl	345	Qy
AAAAA 8388	AATAATGCGAAACAAGCAGCGATTACAGCAATCAATGGCGCATCTGATTTAAATCAAAAA	8329	рь
lnAsn 344	AlaThrAspAlaMetGlyAlaValArgSerLeuValSerAlaSerSerLeuThrG	325	Qγ
ACTTA 8328	CTTAATAATGTTAATAGTGCGAAACATGCATTAAATGGTACGCAAAACTTA	8278	рь
spMet 324	SerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAs	305	Qу
AAGCA 8277	ACAATTTTAAATAAACAAACTGGACCGAATACAGCGAAAACTGCAGTCGAACAAGCA	8221	рь
erAla 304	LysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaIleLysSe	285	Qy
AA 8220	CTAGATGCTGATGAGCAAAAACGTAATGCTTACAATCAAGCTGTATCAAATGCCGAA	8164	ф
luPro 284	GlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysAspLysGl	265	Qy
8163	ATCAACGATAAATCTGGAACATTAGCGAGCCAAAACTTC	8125	рь
erval 264	ValSerMetAlaGlyGlyLeuAlaAlaAsnAlaGlyPheGlyAsnArgLeuLeuSe	245	Qy
CGGCT 8124	TCTGTTAAGCAAAGTGCGAATAGTTTAGATGGTGCAATGGGTAACTTACAAACGGCT	8068	Db
euGly 244	$Thr {\tt ValLeuAlaProAlaLeuAlaSerArgProAlaValGlnGlyAlaValAspLeuAla$	225	γQ
-GCTGTTGAA 8067	CGCAATGATTTAACAAATCAAATTTCACAAGCTACAAACTTAGCTGCTGTTGAA	8014	망
alArg 224	ArgGlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsnAlaVa	205	Qy
CACAA 8013	GTTATTGACAATGGTGATGCAACTGCACAACAATTTCAGATGAAAACACTACAGCACAA	7954	В
euAla 204	ArgLeuHisAspAlaMetAlaAlaSerValLysArgHisSerProSerLe	187	Qy
AACGT 7953	AATGCGAAGAAACGCGAAGCAGAAACTGAAATAACTGCAGCTCAACG	7906	Дb
roAsp 186	GlyThrLysMetMetAspArgAlaThrGlyAspLeuHisTyrLeuSerAlaSerPr	167	Qy
ACTAT 7905		7861	Db
lnVal 166	ProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGl	147	Qy
7860	TTAGTAACATCTAAAAATAACTTACAAAGTTCTGTGAACCAA	7819	망

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PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 8615
LENGTH: 7035
TYPE: DNA
ORGANISM: Staphylococcus aureus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT 10
US-09-815-242-8615
; Sequence 8615, Application US/09815242
; Patent No. US20020061569A1
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Best Local Similarity:
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; LOCATION: (1).
US-09-815-242-8615
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CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-23
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-11-23
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR FILING DATE: 2000-11-27
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APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
FILE REFERENCE: TITRA.011A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Haselbeck, Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FEATURE:
2407 --- CTATCTGATTCTGTGAGTGCATCTAAGTCATTAAGCACATCTGAAAGTAAT----- 2457
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8920 ACAGACGCAAGTCCGAAT 8937
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                                                                                    2350 TCTGGTTCAATAATGACTTCAACATCAGCTAGTACCTCGAAATCGACAAGTGTAAGC--- 2406
                                                                                                                                                                        2290 CAACAATCACAAAGTGTGTCAACAAGTAAAGCTGACTCACAAAGTGCTTCTACGAGCACA 2349
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                                                                                                                                    28
                                                                                                                                                                                                                 8 GlnGlnProProValThrAlaThrAspSerPheArgThrAlaSerAspAlaSerLeuAla 27
                             TyrLeuThrAspHisValPheAlaAlaHisLysLeuProProAlaAspSerAlaAspGly 67
                                                                                                               SerSerSerValArgSerValSerSerAspGlnGlnArgGluIleAsnAlaIleAlaAsp 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Carr, Grant J.
Yamamoto, Robert T.
Xu, H. Howard
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Trawick, John D.
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Zyskind, Judith W.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ...(7035)
                                                                                                                                                                                                                                                                                                              0.00915
129.50
39.55%
17.62%
5.37%
                                                                                                                                                                                                                                                                                                                                                                            Length:
Matches:
Conservative:
                                                                                                                                                                                                                                                                                                                                 Mismatches:
Indels:
                                                                                                                                                                                                                                                                                                          7035
86
107
204
91
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δ	68	GlnAlaAlaValAspValHisAsnAlaGlnIleThrAlaLeuIleGluThrArgAlaSer 8	37
₽	2458		2505
γ	88	ArgLeuHisPheGluGlyGluThrProAlaThrIleAlaAspThrPhe 1	03
В	2506	CATTAAGCGATTTTATTTC	2565
δ	104	AlaLysAlaGluLysLeuAspArgLeuAlaThrThrThrSerGlyAlaLeuArgAla 1	22
В	2566	TCTAGCAGTACTGAAAAATCAGAGAGTGTCTCAACAAGTACATCTGATTCATTGCGTACA 2	2625
Qγ	123	ThrProPheAlaMetAlaSerLeuLeuGlnTyrMetGlnProAlaIleAsnLysGlyAsp 1	42
В	2626		8628
γQ	143	roAlaProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAl	62
В	2629	ACATCGTTAAGTGATTCAGTAAGCATGAGTACATCAGGAAGC 2	670
QΥ	163	AspGlnValGlyThrLysMetMetAs	.82
В	2671	ACAAGTACATCCGAT	712
Ϋ́	183	erProAspArgLeuHisAspAlaMetAlaAlaSerValLysArgHis	101
₽	2713	GCTAGTACATCACAATCGGTAAGTGATAGTACATCAAATTCAATT2	2757
γQ	202	LeuAlaArgGlnValLeuAspThrGlyValAlaValGlnThrTyrSerAlaArgAsn	221
Вb	2758	AGTACATCAGAATCATTAAGTGAGTCAGGTAGTACATCAGAATCTATAAGTATTTCTAAT 2	817
QΥ	222	roAlaLeuAlaSerArgProAlaValGlnGl	241
Ъ	2818	GCATTTCGAATTCAGTGAGTGCATCAACAAGCAAATTGGAATCACAAAGTACATCAAT	2877
Qy	242	nArgL	261
В	2878	TCTAAATCGATGAGTACATCAGAATCATTAAGCGA	931
γQ	262	rValGlnSerArgAspHisGlnArgGlyGlyAlaLeuValLeuGlyLeuLysA	183
В	2932	TCAACGAGCACAAGTGATTCAGTATCTGGATCATTAAGTGTAGCGGGG 2	2979
Ϋ́	282	GluProLysAlaGlnLeuSerGluGluAsnAspTrpLeuGluAlaTyrLysAlaI	201
Ъ	2980	TCACAAAGTGTCTCAACAAGCACATCAGACTCAATGAGCACGTCTGAAATGATA	1033
γQ	302	SerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAla	20
Ф	3034	≱.	093
γQ	321	ThrAspAlaMetGlyAlaValArgSerLeuVa	36
8	3094	AGTACATCAG	153
VΩ	337	rSerLeuThrGlnAsnGlyLeuAlaLeuAlaGlyGlyPheAlaGlyValG	156
В	3154	TCGGATTCTGACAGTAAGTCATTATCATTGAGTACAAGTCAGT	207
Ωy	357	lnGluMetAlaThrLysAsnIleThrAspProAlaThrLysAlaAlaValSe	176
8	3208	CATCAACAAGTAGTTCAGTACGTA	252
Qy	377	GlnLeuThrAsnLeuAlaGlySerAlaAlaValPheAlaGlyTrpThrThrAlaAlaLeu 3	96
8	3253	AATCACAAAGTACATCTGGTTCAATGAGCACAAGTCAATCCGATTCAACAAG	312
ДУ	397	ThrThrAspProAlaValLysLysAlaGluSerPheIleGlnAspThrValLysSerThr 4	16
3	3313		)

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TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Prokaryotes FILE REFERENCE: ELITTA.011A
CURRENT APPLICATION UNMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION UNMBER: 60/20,848
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/20,727
PRIOR APPLICATION NUMBER: 60/20,727
PRIOR APPLICATION NUMBER: 60/20,727
PRIOR FILING DATE: 2000-05-23
PRIOR PRILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR PILING DATE: 2000-11-27
PRIOR FILING DATE: 2000-12-26
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-12-22
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
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Query Match:
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                                                                                                                                                                                          US-09-825-414-7 (1-486) x US-09-815-242-4780 (1-7302)
                                                                                                                                                                                                                                                                                                                Percent Similarity:
                                                                                                                                                                                                                                                                                                                                                              Alignment Scores: Pred. No.:
                                                                                                                                                                                                                                                                                                                                                                                                                                 ; ORGANISM: Staphylococcus aureus US-09-815-242-4780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 4780
LENGTH: 7302
TYPE: DNA
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APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Kari L.
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                                              23 AspAlaSerLeuAlaSerSerSerValArgSerValSerSerAspGlnGlnArgGluIle 42
                                                                                                                                         3 IleAsnArgArgValGlnGlnProProValThrAlaThrAspSerPheArgThrAlaSer
                                                                                        TTAAACCAAAAACAAAAAGATGCATTAAAAACACAAGTTAACAATGCACAACGTGTATCT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACATCAACATCTATGAGTGATTCCACAAGCTTAAGTACATCAGAGTCTGATTCAACGAGC 3510
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GATGCAAATAACGTTCAACACACTGCAACTGAATTGAACAGTGCGATGACAGCACTTAAA 393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -----ThrValAsnAsnLeuArgGlnArgProAlaArgGluAlaAspIleGluGlu 469
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Zyskind, Judith W.
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129.00
35.39%
19.72%
5.35%
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Indels:
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US-09-815-242-8898
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TITLE OF INVENTION: Identification of Essent
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-05-28
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-05-26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GENERAL INFORMATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 8898, Application US/09815242 Patent No. US20020061569A1
                                                   SEQ ID NO 8898
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APPLICANT:
APPLICANT:
APPLICANT:
                                                                      NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version
                                                                                                                                                                                                                                                          PRIOR APPLICATION NUMBER: 60/242,578 PRIOR FILING DATE: 2000-10-23
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                                                                                                                    PRIOR FILING DATE:
                                                                                                                                          PRIOR APPLICATION NUMBER: 60/269,308
       TYPE: DNA
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                                                                                                                                                         APPLICATION NUMBER: 60/253,625
FILING DATE: 2000-11-27
APPLICATION NUMBER: 60/257,931
FILING DATE: 2000-12-22
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Trawick, John D.
Carr, Grant J.
Yamamoto, Robert T.
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Zyskind, Judith W.
                                                                                                                    2001-02-16
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; LOCATION: (1)...(18846)
US-09-815-242-8898
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                                              TTGAATAACTTAACATCAATTAACAATGCACAAAAAGATGCGTTAACGCGTAGCATTGAT
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                                                                                                                                                   Sequence 25, Application US/09287849 Patent No. US20020009459A1
    APPLICANT: Alderson, Mark
APPLICANT: Campos-Neto, Antonio
APPLICANT: Corixa Corporation
TITLE OF INVENTION: Fusion Protiens
TITLE OF INVENTION: and Their Uses
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                                                                                    Skeiky, Yasir A.W. Dillon, Davin C.
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CURRENT FILING DATE: 1999-04-07
PRIOR APPLICATION NUMBER: US 08/818,112
PRIOR FILING DATE: 1997-03-13
PRIOR APPLICATION NUMBER: US 08/942,578
PRIOR FILING DATE: 1997-10-01
PRIOR FILING DATE: 1997-10-01
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
PRIOR FILING DATE: 1998-02-18
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APPLICANT: Xue, Y.
APPLICANT: Zhao, L.
APPLICANT: Zhao, L.
APPLICANT: Zhao, L.
APPLICATION: DNA encoding methymycin and FILE REFERENCE: 600.438US1
CCURRENT APPLICATION NUMBER: US/09/860,846
CURRENT FILING DATE: 2001-05-18
PRIOR APPLICATION NUMBER: 09/105,537
PRIOR APPLICATION NUMBER: 09/105,537
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Patent No. US20020164742A1
GENERAL INFORMATION:
APPLICANT: Sherman, D.H.
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SOFTWARE: FastSEQ for Windows Version
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CGGCAGGGCCACGTCGGCGAACACCTCGTCGCCACGCCGCCAGACACCACGGACGCCCTG
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                                                                                                                       AlaMetAspGlnValGlyThrLysMetMetAspArgAla-----ThrGlyAspLeu---
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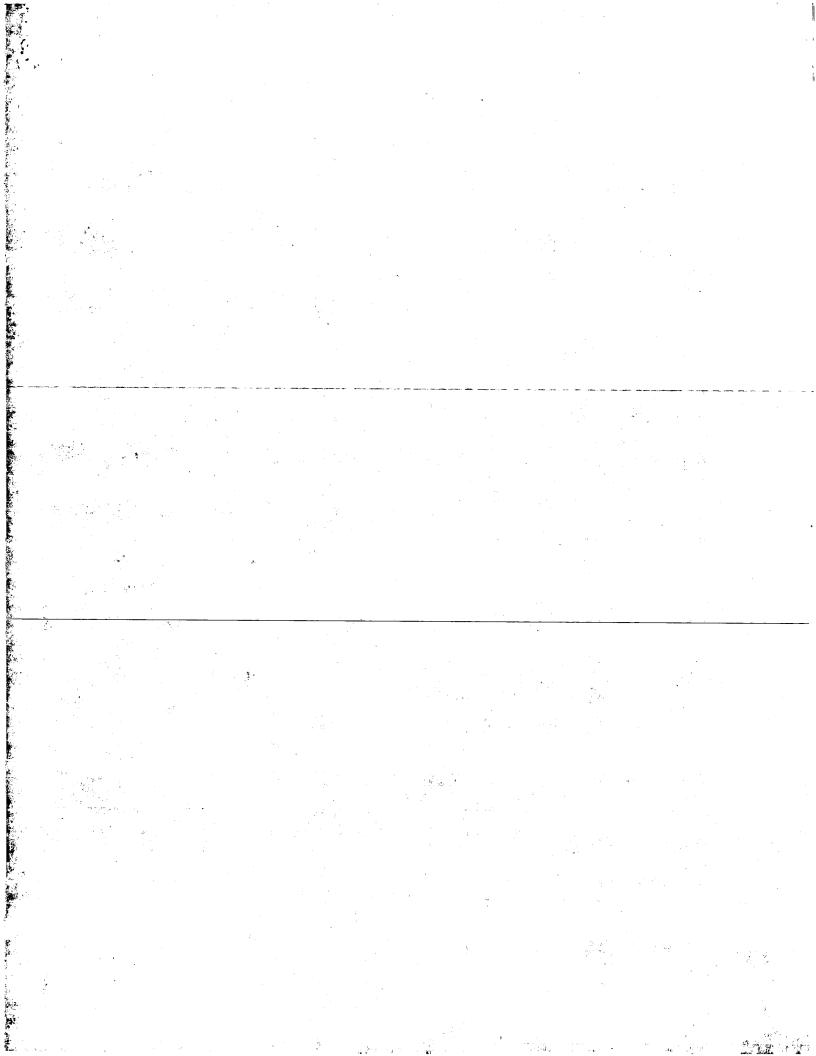
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                                                       Sequence 32, Application US/09861289
Patent No. US20020110897A1
GENERAL INFORMATION:
APPLICANT: Sherman, D.H.
APPLICANT: Liu, H.
TITLE OF INVENTION: DNA encoding methymycin FILE REFERENCE: 600.438US1 CURRENT APPLICATION NUMBER: US/09/861,289
                                 APPLICANT:
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Xue, Y.
Zhao, L.
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Best Local Similarity:
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LENGTH: 11220
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PRIOR APPLICATION NUMBER: 09/105,537
PRIOR FILING DATE: 1998-06-26
NUMBER OF SEQ ID NOS: 43
SOFTWARE: FastSEQ for Windows Version
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Search completed: January 31, 2003, 07:21:46 Job time : 138.921 secs



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-MODEL-frame+_p2n.model -DEV-xlp
-MODEL-frame+_p2n.model -DEV-xlp
-O_cgn2_1/USPTO_spool/US09825414/runat_28012003_161741_26085/app_query.fasta_1.1294
-OB-GenEmb1 -OFMT-fastap -SUFFIX-p2n.rge -MINMATCH-0.1 -LOOPCL-0 -LOOPEXT-0
-ONITS-blits -START-1 -END--1 -MATRIX-blosum62 -TRANS-human40.cdi -LIST-45
-DOCALIGN-200 -THR_SCORE-pct -THR_MAX-100 -THR_MIN-0 -ALIGN-15 -MODE-LOCAL
-OUTFMT-pto -NORM-ext -HEAPSIZE-500 -MINLEN-0 -MAXLEN-2000000000
-USER-US09825414 @CGN 1_1_4707_@runat_2801203_161741_26085 -NCPU-6 -ICPU-3
-NO_XLPXY -NO_MMAP -LARGEQUERY -NEG_SCORES-0 -WAIT -LONGLOG -DEV_TIMEOUT-120
-WARN_TIMEOUT-30 -THREADS-1 -XGAPOP-10 -XGAPEXT-0.5 -FGAPOP-6 -FGAPEXT-7
-YGAPOP-10 -YGAPEXT-0.5 -DELOP-6 -DELEXT-7
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Listing first 45 summaries
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29: em_vi:*
30: em_htg_hum:*
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34: em_htg_mus:*
34: em_htg_mas:*
35: em_htg_rod:*
36: em_htg_rod:*
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39: em_sv:*
39: em_sy:*
40: em_htgo_hum:*
41: em_htgo_mus:*
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

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Deng,W.L., Preston,G., Collmer,A., Chang,C.J. and Huang,H.C.
Characterization of the hrpC and hrpRS operons of Pseudomonas
syringae pathovars syringae, tomato, and glycinea and analysis of
the ability of hrpF, hrpG, hrcC, hrpT, and hrpV mutants to elicit
the hypersensitive response and disease in plants
J. Bacteriol. 180 (17), 4523-4531 (1998)
                                                                                                                                                                                     Submitted (22-NOV-2000) Plant Pathology, Plant Sciences Bldg., Ithaca, NY 14850, U Sequence update by submitter 8 (bases 1 to 52498)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4 (bases 901 to 22404; 31672 to 51723)
Alfano,J.R., Charkowski,A.O., Deng,W.L., Badel,J.L.,
Petnicki-Cowleja,T., van Dijk,K. and Collmer,A.
The Pseudomonas syringae Hrp pathogenicity island has a tripartite mosaic structure composed of a cluster of type III secretion genes bounded by exchangeable effector and conserved effector loci that contribute to parasitic fitness and pathogenicity in plants Proc. Natl. Acad. Sci. U.S.A. 97 (9), 4856-4861 (2000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The Pseudomonas syringae pv. tomato HrpW protein has domains similar to harpins and pectate lyases and can elicit the plant hypersensitive response and bind to pectate plant to pectate plant plant to pectate plant plant plant protection (19), 5211-5217 (1998)
                                                  On or before Mar 14, 20 gi:3228544, gi:790906,
                                                                                                          Submitted (05-MAR-2001) Plant Pathology, Plant Sciences Bldg., Ithaca, NY 14850,
                                                                                                                                                                                                                                                                                                          Direct Submission
Submitted (07-FEB-2000) Dept.
Parkway, Las Vegas, NV 89154,
7 (bases 1 to 52498)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Preston,G., Huang,H.C., He,S.Y. and Collmer,A. The HrpZ proteins of pseudomonas syringae pvs. syringae, glycinea, and tomato are encoded by an operon containing Yersinia ysc homologs and elicit the hypersensitive response in tomato but not
                                                                  Sequence update by submitter on or before Mar 14, 2001 th
                                                                                                                                                  Ramos, A.R., Rehm, A.H. and Collmer, A.R. Direct Submission
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syringae pv. tomato DC3000
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541, gi:8037790, gi:11276506
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TELSPGDQSYVFGYGYSFTEGYTLVAKKFQSSAS"
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YQTVYAQRAGAVAAPTAGLHFDQPLMEAIAAKGVETAFVTLHVGAGTFQPVRVEQIED
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TKAQLRAKVEHPLRVIKRQFGYTKVRFRGLAKNTAQQATLFALSNLWMVRKRLLAMGE
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AEKIRLSKPEKWYAFVGATHATSCDGVPGLAELHGVRSLVIDDLGLKSRATVDINVK
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            LeuValGlySerValGlyValPheAlaGlyTrpThrThrAlaGlyLeuAlaThrAspPro 400
                                                             MetAlaThrLysAsnIleThrAspSerAlaThrLysAlaAlaValSerGlnLeuSerAsn
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CTGGCAGGTTCGGCAGCCGTTTTCGCAGGCTGGACCACGGCCGCGCTGACAACCGATCCC
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Submitted (13-DEC-2001) MGCB, Th
57th Street, Chicago, IL 60637,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and Greenberg, J.T.
A functional screen for the type III
pathogen Pseudomonas syringae
science 295 (5560), 1722-1726 (2002)
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and Greenberg,J.T.
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AF458051
AF458051.1 GI:19071505
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Pseudomonas syringae pv. maculicola
Bacteria; Proteobacteria; gamma subd
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                                                                        /product="type III effector HopPtoAlPma"
/protein_id="AALB4253.1"
/protein_id="AALB4253.1"
/db_xref="GI:19071506"
/translation="MYINRSISSQSSIGTESFHSAQSVASSSVRVLSEAEQTKLNDIT
HYLTDHVFAAHRLPVNDINVDQDVVHAHNVEIGKIISARALRLLDEGETALSIGETFA
KAEKEFRMASAASGALRATPFRAASVLQYMQPAINKGGMLPTPLKPLAPLVSGALSGV
MDQVCTGVMRKATGDLHYLSTAPEKLHDAMAASVKRHKFGVMRQAADLGIAVQTYTAR
NALRTVLAPALASRPAVQGAVDISVSAAGSLVANAGFSERMHTVQARDHLRGGAFVLG
IKDKQPKADLSEETDWLDAVRIKSASYSGAALNAGKRVAGLPLDVATDGLKAVRSLV
                              TLRRRTVREPDIEEGGVAAGTGSPVAVPFEAMRP"
                                           SATSLMQNGLVMAGGFAGVGKLQEMATKNITHPATKAAVSQLTNLAGSAPVFSAWTTA
AVATDPAVKKAESFLQDTVKTTVSNGTSALADKTVKLAKAGIDASAERIATTGASLRD
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/strain="ES4326"
/db_xref="taxon:59511"
/note="pathovar: maculi
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CTGATGCAAAACGGTCTGGTAATGGCGGGTGGTTTTTGCCGGTGTGGGTAAGTTGCAGGAA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ACCAGCGCGCTGGCCGACAAAACCGTCAAGCTGGCCAAGGCGGGCATTGACGCGAGCGCC
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                                                                                        Direct Submission

Submitted (05-DEC-2001) Genoscope and CNRS UMR-8030, 2 rue Gaston Cremieux, CP5706, 91057 Evry Cedex, France, Laboratoire de Biologie Moleculaire des Interactions Plantes-Microorganismes INRA-CNRS, BP27, 31326 Castanet-Tolosan Cedex, France, Fondation Jean Dausset-CEPH, 27 rue Juliette Dodu, 75010 Paris, France, LMGM CNRS 118 Route de Narbonne, F 31062 Toulouse Cedex 4, Genoscope and INRA
                                                                                                                                                                                                                                                                                                                              Salanoubat, M., Genin, S., Artiguenave, F., Gouzy, J., Mangenot, S., Arlat, M., Billault, A., Brottier, P., Camus, J.C., Cattolico, L., Chandler, M., Choisne, N., Claudel-Renard, C., Cunnac, S., Demange, N., Gasgin, C., Lavie, M., Molsan, A., Robert, C., Saurin, W., Schiex, T., Siguier, P., Thebault, P., Whalen, M., Wincker, P., Levy, M., Weissenbach, J. and Boucher, C.A.
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Ralstonia solanacearum GMI1000 m
segment 8/11
AL646083 AL646053
             URGV, 2 rue Gaston Cremieux, CP5706, 91057 Evry Cedex, Franc
Laboratoire de Biometrie et Intelligence Artificielle INRA,
F31326 Castanet-Tolosan Cedex. Laboratoire de Genetique Cel
INRA, BP27, F31326 Castanet-Tolosan Cedex
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AL646083.1 GI:17
Christian.Boucher@toulouse.inra.fr
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Boucher, C.A.
                                                                                                                                                                                                                                                                                                                Weissenbach, J. and Boucher, C. Genome sequence of the plant
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/note-"Product confidence: putati
Gene name confidence: hypothetica
predicted by Codon_usage
predicted by FrameD"
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Gene name confidence: hypothetical
predicted by Codon_usage
predicted by Homology
predicted by FrameD"
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YTLNEIEAIGQLCKDARIKLQMDGSRFANALVSLGCSPAAMTWKAGVDALSFGATKNG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gene name confidence : hypothetical predicted by Codon usage predicted by Homology predicted by FrameD"
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predicted by FrameD"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /codon_start=1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /db_xref="GI:17431589"
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Gene name confidence: hypothetical
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predicted by Homology
predicted by FrameD"
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Gene name confidence: hypothetical
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predicted by Homology
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Gene name confidence : hypothetical
predicted by Codon_usage
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predicted by FrameD"
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                                                                                         ValValAspMetGlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThrVal 226
                                                                                                                                                                                     LysLeuHisAspAlaMetAlaValSerValLysArgHisSerProAlaLeuGlyArgGln
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ValLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuAlaThrProLeuLys 149
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/note="product confidence: putative
Gene name confidence: hypothetical
predicted by Codon_usage
predicted by Homology
predicted by FrameD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /translation="maekittrkpradaernrQrllDVaktafaekGVSASLEDIare
agvgigtlyrhfptrdalideiyrdegsrlaeaarQlseDQppleavrQwLLLfvGyL
ankQiraDvlnCmtdCserlCtlSGEVLIETLaQLIERakQSGaIGLaVePLDLLSaV
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/protein_id="CAD18272.1"
/db_xref="GI:17431595"
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/gene="RSp1121"
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REFERENCE
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Drosophila melanogaster

Drosophila melanogaster

Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;

Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;

Ephydroidea; Drosophilidae; Drosophila.

1 (bases 1 to 1558)

Stapleton, M., Brokstein, P., Hong, L., Agbayani, A., Carlson, J.,

Stapleton, M., Brokstein, P., Hong, L., Agbayani, A., Carlson, J.,
              This clone was sequenced as part of a high-throughput process to sequence clones from Drosophila Gene Collection 1 (Rubin et al., Science 2000). The sequence has been subjected to integrity checks for sequence accuracy, presence of a polyA tail and contiguity within 100 kb in the genome. Thus we believe the sequence to reflect accurately this particular cDNA clone. However, there are
                                                                                                                                                                                                                    Submitted (03-APR-2002) Berkeley Drosophila Lawrence Berkeley National Laboratory, One (Berkeley, CA 94720, USA
                                                                                                                                                                                                                                                                                                                    Champe, M., Chavez, C., Dorsett, V., Dresnek, D., Farfan, D., Frise, E., George, R., Gonzalez, M., Guarin, H., Kronmiller, B., Li, P., Liao, G., Miranda, A., Mungall, C.J., Nunco, J., Pacleb, J., Paragas, V., Park, S., Patel, S., Phouanenavong, S., Wan, K., Yu, C., Lewis, S.E., Rubin, G.M.
artifacts associated with the generation of cDNA clones that may
                                                                                                                                           Berkeley, CA 94720
                                                                                                                                                                                 Sequence submitted by: Berkeley Drosophila Genome Project
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                                                     1063 ACGGATCACACGACGCACGGTCTTGTAGCGGTATCCATCATCAGCCAGAGGAGTCTCGAC 1004
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GlyAlaValAspPheGlyValSerThrAlaGlyGlyLeuValAlaAsnAlaGlyPheGly
                                                                                                                                                                                                                                                                       CACGGTCTTGTAGCCGTATCCATCAGCCAGGGGAGTCTCCACAGCAACAGCCTCGGA 1124
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                                                                                                        AlaLeuAsnValValArgThrValLeuAlaProAlaLeuAlaSerArgProSerValGln
                                                                                                                                                                 GGCGGACTCCTCAACAGGGGGCAGGTATTCAGGGGACAGCTCGGAGACATCACGACGACG
                                                                                                                                                                                                                 ArgGlnValValAspMetGlyIleAlaValGln-----
                                                                                                                                                                                                                                                                                                                             HisAspAlaMetAlaValSerVal------LysArgHisSerProAlaLeuGly
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             cdna@fruitfly.berkeley.edu.
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YLPPVEETASAIIDVPAEQTVLASDGYRYKTVRRLKLRRH"
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aseavavdtpladdgyryktvrrvirrrdvnelpsgeylppveesaseavavetpla
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REFERENCE

AUTHORS JOURNA

ORGANIS ORGANIS REFERENCI AUTHORS	RESULT 5 AC108877/c LOCUS DEFINITION ACCESSION VERSION KEYWORDS	Оу	Qy	Db Qy	Дy	Qy db	ОУ	QУ	ОУ	ОУ	Qy	Qy Db	Qу	Qу	Qу	Db 1
RGANISM ERENCE	F 5 877/c ITION SION ON RDS	482 262	462 316	461 376	444 436	429 496	409 538	390 595	370 655	350 715	333 775	314 835	296 895	279 940	259 988	003
Drosophila melanogaster  Drosophila melanogaster  Eukaryota; Metazoa; Arthropoda; Hexapoda; Insecta; Pterygota;  Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;  Ephydroidea; Drosophilidae; Drosophila.  1 (bases 1 to 163709)  Muzny,D., Scherer,S., Adams,M.D., Holt,R.A., Evans,C.A.,		eGlnLeuArgArg 486            CACATCACGACGG 250	aProGluAlaAspIleGluGluGlyGlyIleSerAlaPheSerArgSerGluThrProPh 482              :::      TTCGGAGGCGGATTCCTCAACAGGGGGCAGGTATTCACCGGAGGGGAGCTCGTT 263	ACGGCGGACGGTCTTGTAACGGTAGCCATCATCAGCCAGAGGAGTCTCGACGGCAACGGC 317	rSerThrGlyAla SerLeuArgSerThrValAsnAsnLeuArgHisArg 460           	ValLysLeuAla-LysThrValLysAspMetSerGlyGluAlaIleSe 444	IleGlnAspLysValLysSerThrAlaSerSerThrThrSerTyrValAlaAspGlnThr 428 :::::       ::	GlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGluSerPhe 408     ::	AlaThrLysAlaAlaValSerGlnLeuSerAsnLeuValGlySerValGlyValPheAla 389	GlyGlyTyrAlaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAspSer 369	ArgSerLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAla 349       ::     ::::       ::: ::    GACGGTCTTGTAACGGTAACCATCATCAGCAAGAGGGGTGTCCACAGCAACAGCCTCAGA 716	GlyLysargMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLysAlaVal 332    ::: ::      	AspalaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAla 313 ::: ::	MetLysaspLysGluProLysAlaAlaLeuSerGluGluThrAspTrpLeu 295	ASPÄRGMEtLeuSerValGlnSerÄrgÄSpGlnLeuÄrgGlyGlyÄlaPheValLeuGly 278	GA

TITLE
JOURNAL
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AUTHORS
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TITLE JOURNA

COMMENT

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Denn, A. L., Dung, Y., Dunn, H. H., Douthwalt, C., Edgar, D., Edwards, C.C., Elgar, D., Char, Rocha, S., Durbin, K. J., Earnhart, C., Edgar, D., Edwards, C.C., Elhaj, C., Escotto, M., Falls, T., Ferraguto, D., Flagg, N., Ford, J., Foster, P., Frantz, P., Gabisi, A., Gaco, J., Garcia, A., Garner, T., Garca, N., Gill, R., Gorrell, J. H., Guevara W., Gunaratne, P., Hale, S., Hamilton, K., Harris, C., Harris, K., Hart, M., Havlak, P., Hawes, A., Hernandez, J., Harris, C., Harris, K., Hart, M., Havlak, P., Hawes, A., Hernandez, J., Harris, C., Harris, K., Hogues, M., Holloway, C., Henilins, B., Homsi, F., Howard, S., Huber, J., Huyk, S., Hume, J., Joudah, S., Karlsson, E., Kelly, S., Khan, U., King, L., Korvah, J., Joudah, S., Karlsson, E., Kelly, S., Khan, U., Leal, B., Lewis, L.C., Levis, L., Li, J., Li, Z., Lichtarge, O., Lieu, C., Liu, J., Liu, W., Levis, L., Li, J., Li, Z., Lichtarge, O., Lieu, C., Liu, J., Liu, W., Levis, L., Li, J., Li, Z., Lichtarge, O., Lieu, C., Liu, J., Liu, W., Levis, L., Li, J., Li, Z., Lichtarge, O., Lieu, C., Liu, J., Liu, W., Levis, L., Li, J., Lu, X., Lucler, A., Lucler, R., Luna, R., Martin, R., Masssy, E., Mawhiney, E., McLeod, M., P., Meador, M., Martin, R., Martin, R., Martin, R., Masssy, E., Mawhiney, E., McLeod, M., P., Meador, M., Mguyen, N., Nguyen, N., Nickerson, E., Nwokenkwo, S., Oguh, M., Okwuonu, G., Oragunye, N., Ovledo, R., Pace, A., Payton, B., Peery, J., Perez, L., Peters, L., Pickens, R., Pace, A., Payton, B., Petery, J., Peters, L., Pickens, R., Pace, A., Payton, B., Pullis, M., Ren, Y., Rives, M., Oyledo, R., Rojubokan, I., Rolfe, M., Stone, H., Sutton, A., Svatek, A., Tabor, P., Tamerisa, K., Tamerisa, K., Tangrisa, K., Washington, S., Williams, G., Wallamson, A., Waeczyk, R., Wooden, S., Wallamson, A., Waeczyk, R., Wooden
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Dugan-Rocha, S.D., Sodergren, E.S., Hodgson, A.H., Chen, R.C.,

Ayele, M., Scott, G.S., Worley, K.W., Amamatides, P.G., Brandon, R.C.,

Rogers, Y., An, H., Baldwin, D., Beeson, K.Y., Brown, M., Buhay, C.,

Rogers, Y., An, H., Baldwin, D., Beeson, K.Y., Brown, M., Buhay, C.,

Busam, D.A., Center, A., Chen, G., Chen, Z., Clerc-Blankenburg, K.,

Davenport, L.B., Dietz, S.M., Ding, Y., Dodson, K., Doup, L.E.,

Draper, H., Emery-Cohen, A., Ferriera, S., Garg, N.D.S., Houck, J.,

Draper, H., Emery-Cohen, A., Ferriera, S., Garg, N.D.S., Houck, J.,

Hostin, D., Howland, T.J., Hume, J., Ibegwam, C., Jalali, M., Kovar, C.,

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Hostin, D., Howland, T.J., Hume, J., Ibegwam, C., Jalali, M., Kovar, C.,

Richeler, F., Shen, H., Strong, R., Tector, C., Wang, Q., Williams, S.M.,

Xiang, J., Zaveri, J.S., Zhou, J., Zorrilla, S., Smith, H.O.,

Richeler, F., Shen, H., Strong, R., Tector, C., Wang, Q., Williams, S.M.,

Xiang, J., Zaveri, J.S., Zhou, J., Zorrilla, S., Smith, H.O.,

Richeler, F., Shen, H., Strong, R., Tector, C., Wang, Q., Williams, S.M.,

Xiang, J., Zaveri, J.S., Zhou, J., Zorrilla, S., Smith, H.O.,
Submitted (22-JUN-2002) Human Genome Sequencing Center, Department of Molecular and Human Genetics, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030, USA On Jun 22, 2002 this sequence version replaced gi:18463997. INFORMATION: http://www.hgsc.bcm.tmc.edu/ or email
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Submitted (01-FEB-2002) Human Genome Sequencing Center, Department of Molecular and Human Genetics, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030, USA
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Wu, C., Wu, Y., Wu, Y.F., Zh
Weinstock, G. and Gibbs, R.
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CLONE LENGTH: This sequence does not necessarily represent the entire insert of this clone. Overlapping regions of clones are only sequenced and submitted once, so the sequence for the remainder of the insert may be found in the record for the adjacent clones.
Overlapping clones are noted at the beginning and
     end of the
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## ANNOTATION OF FEATURES:

STSs are identified using ePCR (Genome Res. 7:541-of a local database that includes entries from dbSTS, local mapping efforts. 7:541-550) searches dbSTS, GDB, and

Repeats are identified using RepeatMasker (A. Smit and P. Green

unpublished.) for Human and Mouse sequences.

Genes and Region of sequence similarity are identified by BLAST (Nuc. Acids Res. 25:3389-3402) similarity (expect < 1e-34) to the EST and cDNA sequences. Genes demonstrate at least two exons flanked by consensus splice sites that maintained sequence continuity across the splice junctions. Sequences that are not identical matches are annotated as similar.

SEQUENCING READ COVERAGE: Sequencing is completed to a minimum standard of double strand coverage with a minimum of 2 clones and 2 reads with no ambiguities or 2 chemistries with a minimum of 2 clones and 3 reads with no ambiguities. If the sequence quality for a region does not meet this standard, it will be indicated in the annotation as Low Coverage.

OUALITY OF INDIVIDUAL BASES: This sequence meets stringent quality standards - estimated error rate less than 1 per 10,000 bases. Reports of lowest quality individual bases and measures of base quality are listed below. Description of the metrics can be found at URL: http://www.hgsc.bcm.tmc.edu:8088/quality.info/genbank.annot ation.html

BASE COUNT ORIGIN FEATURES misc\_feature source 44179 1. .163709 119259. .120189 /organism="Drosophila /db\_xref="taxon:7227" /function="pcr product sequence only"
37768 c 36705 g 45057 t /function="per product 121549. .122359 function="per product /clone="RP98-17L24" /chromosome="3L" Cocation/Qualifiers .20709. .121089 melanogaster" sequence sequence only" only"

Percent Similarity:
Best Local Similarity:
Query Match:
DB: Pred. No.: Alignment Scores: 91.9 160.50 38.52% 23.95% 6.67% Mismatches: Indels: Gaps: Matches: Conservative: 163709 97 59 157 157

US-09-825-414-66 (1-487) x AC108877 (1-163709)

ş 밁 Ş 115098 161 141 GlyAlaMetAspGlnValGlyThrLysMetMetAspArgAlaArgGlyAspLeuHis--- 179 GGCGGCTTAGTGGCGACGGAGCTTCAGACGACGGACGGTCTTGTAGCGGTAGCCATCGCT GlyAspTrpLeuAlaThrProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSer 160 115039

Ş В В GGGCAGGTACTCGCCGGAAGGCAGCTCAGAGACATCACGGCGGCGACGGATCACACGACG GGCCAGGACGGTCTGCTCGGCGGCACATCAATGATGGCAGAGGCGGTCTCCTCCACGGG -TyrLeuSerThrSerProAspLysLeu

밁 Ş

CACGGTCTTGTAGCGGTATCCATCATCAGCCAGGGGAGTCTCCACAGCCAACAGCCTCGGA 114859

DEFINITION

complete sequence;

HisAspAlaMetAlaValSerVal------LysArgHisSerProAlaLeuGly

189

RESULT 6 AL646078 Š В Š 밁 Š 밁 Ş 밁 Ş В Ş 밁 Ş 밁 Š 밁 Ş 밁 Š 밁 ş В Ş Š 밁 Š 밁 Š B δÃ ş 밁 밁 rocus 113997 114231 114570 114630 TCCATCAGCAGCCAGAGGGGTCTCAACAGCAACAGCCTCGGAGGCAGACTCCTCAACGGG 114571 114171 114510 114798 114858 314 462 461 429 409 333 296 279 239 205 rSerThrGlyAla----SerLeuArgSerThrValAsnAsnLeuArgHisArg----GGCGGACTCCTCAACAGGGGGCAGGTATTCAGGGGACAGCTCGGAAACATCACGACGACG GlyGlyTyrAlaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAspSer GACGGTCTTGTAACGGTAACCATCATCAGCAAGAGGGGTGTCCACAGCAACAGCCTCAGA 114451 GGGCAGGTACTCGCCGGAAGGAAGCTCATTGACATCACGACGACGACGGATCACACGGCG 114511 GlyLysArgMetAlaGlyLeuProLeu---AspValAlaThrAspGlyLeuLysAlaVal AspargMetLeuSerValGlnSerArgAspGlnLeuArgGlyGlyAlaPheValLeuGly 278 CACATCACGACGG aProGluAlaAspIleGluGluGlyGlyIleSerAlaPheSerArgSerGluThrProPh ACGGCGGACGGTCTTGTAACGGTAGCCATCATCAGCCAGAGGAGTCTCGACGGCAACGGC CTCAACAGGGGGCAGGTACTCAGGGGAGAGTTCGGAGACATCACGACGACGACGATCAC GTAGCGGTAGCCATCATCAGCCAGGGGAGTCTCGACAGCAACAGCCTCGGAGGCGGACTC GGCAACAGCCTCGGAGGCGGACTCCTCAACAGGGGGCAGGTACTCAGGGGAGAGTTC---GlyTrpThrThr---AlaGlyLeuAlaThrAspProAlaValLysLysAlaGluSerPhe ACGGATCACACGGCGGACAGTCTTGTAGCGGTAGCCATCATCAGCCAGGGGAGTCTCGAC AlaThrLysAlaAlaValSerGlnLeuSerAsnLeuValGlySerValGlyValPheAla ArgSerLeuValSerAlaThrSerLeuThrLysAsnGlyLeu-----AlaLeuAla -----AspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAla GGCGGATTCCTC - - - - - - AACAGGGGGCAGGTATTCGGCCGGACAGCTCGTTTAC - - -GlyAlaValAspPheGlyValSerThrAlaGlyGlyLeuValAlaAsnAlaGlyPheGly ACGGATCACACGACGCACGGTCTTGTAGCGGTATCCATCATCAGCCAGAGGAGTCTCGAC 114739 GGCGGACTCCTCAACAGGGGGCAGGTATTCAGGGGACAGCTCGGAGACATCACGACGACG ArgGlnValValAspMetGlyIleAlaValGln----eGlnLeuArgArg TTCGGAGGCGGATTCCTCAACAGGGGGC-----AGGTATTCACCGGAGGGGAGCTCGTT 113998 ValLysLeuAla-LysThrValLysAspMetSer-----GlyGluAlaIleSe IleGlnAspLysValLysSerThrAlaSerSerThrThrSerTyrValAlaAspGlnThr MetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAspTrpLeu------AlaLeuAsnValValArgThrValLeuAlaProAlaLeuAlaSerArgProSerValGln AL646078 203050 bp DNA Ralstonia solanacearum GMI1000 megaplasmid, 486 113985 --ATCACGACGCCGACGGATCACACGACGGACAGTCTTGTAGCGGTA 114631 -GGAGACATCACGACGACGACGGATCACACGGCGGACAGTCTT 114232 ----SerAl 462 ----ThrPheSer BCT 07-DEC-2001 482 444 408 369 313 114112 114274 114676 258 238 114799 114052 114724

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JOURNAL REFERENCE
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                                                                                                                                                                    CDS
                                                                                                                                                                                                                                                                   gene
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Submitted (05-DEC-2001) Genoscope and CNRS UMR-8030, 2 rue Gaston Cremieux, CP5706, 91057 Evry Cedex, France, Laboratoire de Biologie Moleculaire des Interactions Plantes-Microorganismes INRA-CNRS, BP27, 31326 Castanet-Tolosan Cedex, France, Fondation Jean Dausset-CEPH, 27 rue Juliette Doddu, 75010 Paris, France, LMGM CNRS 118 Route de Narbonne, F 31062 Toulouse Cedex 4, Genoscope and INRA URGV, 2 rue Gaston Cremieux, CP5706, 91057 Evry Cedex, France, Laboratoire de Biometrie et Intelligence Artificielle INRA, BP27, Laboratoire de Biometrie et Intelligence Artificielle INRA, BP27,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 (bases 1 to 203050)
Salanoubat, M., Genin, S., Artiguenave, F., Gouzy, J., Mangenot, S., Arlat, M., Billault, A., Brottier, P., Camus, J.C., Cattolico, L., Chandler, M., Choisne, N., Claudel-Renard, C., Cunnac, S., Demange, N., Gaspin, C., Lavie, M., Moisan, A., Robert, C., Saurin, W., Schiex, T., Siguier, P., Thebault, P., Whalen, M., Wincker, P., Levy, M., Weissenbach, J. and Boucher, C.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 segment 3/11.
AL646078 AL646053
AL646078.1 GI:17430778
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Christian.Boucher@toulouse.inra.fr
http://sequence.toulouse.inra.fr/R.solanacearum.html
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Boucher, C.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Unpublished
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Genome sequence of the plant pathogen Ralstonia solanacearum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ralstonia solanacearum
Bacteria; Proteobacteria;
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Gene name confidence : hypothetical
predicted by Codon_usage
predicted by Homology
predicted by FrameD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /plasmid="megaplasmid"
complement(147...1499)
      Gene name
predicted
                                                                                                                                                                 complement(1531. .2961)
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Gene name confidence : putative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /note="RS05460"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /db_xref="taxon:305"
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FINEENGKÄÄTAAAVQLAÄGÄNAVRTÄEGVQARMAELSRTMPAGMSYSIPFNITAPFVK
ISIEKVIQTILEAMVLVFLVMYLFLQNVRYTLIPAITAPTALTISTEKVIQTILEATISTEKVIQTILEATISTEKVIQTILEATISTEKVIGTILVANTUSTLOMYRYTLIPAITAPTALTAFTINIASGESINV
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TOMLKDMDARNGATAQNEMRLAQQAMAGATEGTVMSLLPPAIDELGTSSGFTLRLQDRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NQGDAALKAAETKLLELAAQSRIVSGVYPDGLPAGTSIRLDIDRQKAEALGVAFTSIS
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RPVWSETPLQLVRFQGFPAARISGNAAPGASSGAAMAEMERLAAQLPPGFAIAWTGQS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AQVDVQNKLKAIEPRLPQVVRQNGLTVESASSGFLMIIGLQSDDGRFDETALSDYMAR
NVVEELRRIEGVGRVQLFGAEQAMRIMVDPAKLIAYGLSMNDLSAAISQQNAQIAPGS
VGASEALPAQRVTVPLTVQGQLTTPEQFAAIVLRANANGSKVVMGDVAEVELGAQSYG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /function="cell processes; transport of small molecules"
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Gene name confidence : putative
predicted by Codon_usage
predicted by Homology
predicted by FrameD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /translation="MRLRILPLYLALSACSLPPALIKPALPVPATFPRESGPEYQAHA
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                                                                                                                                                                                                                                                                                                                                                                                                     /function="cell processes; protection responses;
drug/analog sensitivity"
/note="Product confidence : probable
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PNDVFFKVGMITVIGLSAKNAILIVEFAKQLREQGKGLVESAVTAARLRLRPILMTSL
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QAEGGYANAQADLEARTRALAQAGNSLQRLYGAGLPADLPAPLSLETQPYVTQLPAGL
PSELLIRRPDIRQAEHNLAAANADIGAARAAFFPRLSLTASLGYASPAMGSLFDGGHR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       complement(6136. .7293)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /protein_id="CAD17463.1"
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predicted by FrameD"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note="RSp0313; RS05456"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WRASRQAPPPPVPHQPQEG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AFGLGVVPLMIAMGASAETQHAIGTGVFGGMVSATVLAIFFVPVFFVFVMGLQERFEA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /evidence=not_experimental
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                                                                                                                                              transl_table=
                                                                                                                                                                                                                                               name confidence: putative icted by Codon_usage icted by Homology icted by FrameD"
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Best Local Similarity:
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               37
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rSerCysArgAspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAlaHi
::::
                                               GCCGAC---AGCCTGGCCTCCAATCCGTCCAGCACCAGTGCCCGCCAGGTCTTCCTGAG
                                                                                   aSerAspAlaSerLeuAla-----
                                                                                                                   CACCTACCTGTCGGACAGCAACAGCGGCCTGGGCCTCGGCGCTGACCAGCTTCTTCAATGC
                                                                                                                                                  HisIleAsnGlnSerAlaGlnGlnProProGlyVal-AlaMetGluSerPheArgThrAl
                                                                                                                                                                                     (1-487) x AL646078
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NNPQRQLLPGMFVRARVPHARYTDALTYPQQAVVRVGGQPQVWTLDANSHARLKPVEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /function="miscellaneous; not classified /note="Product confidence : probable Gene name confidence : hypothetical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        7392.
                                                                                                                                                                                                                                                                                                                                                                     /product-"PROBABLE TRANSMEMBRANE SENSOR KINASE
TRANSCRIPTION REGULATOR PROTEIN"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             predicted by FrameD"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /translation="MEILNQRGAAAVPVMPPPSGAAQSAQALILIAEDEPEIADILAA
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LTALAQDLIKLMGLRIGADDYVKFPENPAEVVLARTQAVLRRSMSGTGRRDQRVLRVAB
FQIDLDNHEATVQVGKQRHALALTLTEFKLLAQLARAPKRVFSRAELLAACLPEGDTL
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                                                                                                                                                                                                                                                                                                                                                                                                                                           Complete Genome Sequence of Agrobacterium tumefaciens C58 (Rhizobium radiobacter C58), the Causative Agent of Crown Disease in Plants
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Agrobacterium tumefaciens str. C58 (Cereon)
Bacteria; Proteobacteria; alpha subdivision; Rhizobiaceae group;
Rhizobiaceae; Rhizobium.
                                                                                                                                                                                                                                                                                                                            Submitted (14-AUG-2001) Cereon Genomics, Cambridge, MA 02139, USA
                                                                                                                                                                                                                                                                                                                                                                                                                       Unpublished
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||||:::
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/strain="C58"
                                                                                                                                                                                       /gene="AGR_C_2485"
                                                                                                                                                                                                                                                                                                      Location/Qualifiers
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                                                                                                                                /note="hypothetical protein - Synechocystis sp. (strain
                                                                                                                                                      /gene="AGR_C_2485"
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EGVQAQTRVLVRALQRLAVPFLFFIIKSTLAENDDELLRDYLLFDRVDAGRLSLLLGQQTA
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GHPTWGAAVAIAERNRGEGDDDIDMVCVLEEKVFQVRCAVKMRAGAVSTAEFDLPRKS
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                                                                                                                                                                                                     RSGEIVTRISDAQTRLSGQAAAVAQTFSEAGNIIVNKVAEAEAVVRSQVGVISETLTS
VESALDARGESIRSALDNRTRELNSMLASRSAELSRLIEEKAKPVVEEYATIGREAAE
KIVSAAQQSAELLSQSNSGNYGMVEQAISDVAAAGTDAASKLVAATROSTDMLSETHT
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LDMSFSGVEEKITDILDGRTAALKSAVAGVEDRIAGALDSRTAALSGIVSGAEERIAE
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NSAFDEHVAQFASAFDQRAGSLDSKLMESLARINETVAGGSEALDTILTSGLERIGST
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1364. .3313
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IVGRFEEHSKVLSQASELLNAAQSSLVGTLEERQDALRSLSVGLVKRSEEIETAMRNV
                                                                                                                                                                      AMADAVEQGIDKYARSGSDAANKLVAATRQSTDMLSQTHNSMAEIVEQSATNFNAAVE
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RSNALFGALSASQDRFDEALASRSLAITGSVSGTAEHLAAMLDERAAAINSVVADVER
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                                                                                                                                                                                                                                                                                                                                                IEGKASDLAVSLRGAVVSATQNIGDEAARSSALLAKSGSEFAEQVQAQNEAFTKAIEE
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Score:
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                                                                                                                                                                                                                               7527
                                                                                                                                                                                                                                                                                             7587
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    7725 ------CTGCATGATGTCGTTTCCGGCGCGGAGAGCCGCATC 7690
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8049 GATGCCTTCACCAATTCGCACGCGAAGATCGATACCGTTCTGGCGGAACGCAGCAACGCC 7990
                                                                                                                                                                                                                                                                                                                                                                                                                        7689 GCCGATACGCTTGAC-------GGCCGCACCGCCGCTCTTTCCAGCGCG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               7896 GAACACCTTGCCGCGATGCTCGATGAACGCGCCGCCGATCAACAGCGTCGTTGCCGAC 7837
                              7362 -----ATCGCGGATGCTCTCGACAGCCGTACCATGGCGCTCGACATGACCTTCTCC 7312
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               141 --- GlyAspTrpLeuAlaThrProLeuLysProLeuThrProLeuIleSerGlyAlaLeu 159
   308
                                                                                                                                273
                                                                                                                                                                                      255 AlaGlyPheGlyAspArgMetLeuSerValGlnSerArg-----AspGlnLeuArgGly 272
                                                                                                                                                                                                                                                                                                                                                                                   220 LeuAsnValValArgThrValLeuAlaProAlaLeuAlaSerArg-------
                                                                                                                                                                                                                                                                                                                                                                                                                                                  200 SerProAlaLeuGlyArgGlnValValAspMetGlyIleAlaValGlnThrPheSerAla 219
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               125 PheAlaAlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsnLys------ 140
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   109 PheAspArgLeuAlaThrThrAlaSerSerAlaPhe------GluAsnThrPro 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           69 AspAlaAlaLeuAlaHisAsnGluGlnIleAspAlaLeuValGluThrArgAlaAsnArg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 89 LeuTyrSerGluGlyGluThrProAlaThrIleAlaGluThrPheAlaLysAlaGluLys 108
                                                                                                                                                                                                                      TyrLeuSerThrSerProAspLysLeuHisAspAlaMetAlaValSerValLysArgHis 199
                                                                                                                                                         GCACCTTCGGTGACGTGGTTGCCGGTGCTGAAACCCGTATCGCCGAAACGCTTGATGGC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SerGlyAlaMetAspGlnValGlyThrLysMetMetAspArgAlaArgGlyAspLeuHis 179
GlyAla-----
                                                           LeuSerGluGluThrAspTrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSer 307
                                                                                              CGCACCGCAGCGCTCAATGCCGTGGTTTCCGGTGCCGAGGAGCGC------
                                                                                                                      ATGACCTTCGCCAATGTTGAGGAACGGCTTTCCGAGACGCTCGACAACCGCACCTCCGCT 7528
                                                                                                                                                                                                                                                                                                                        -----ProSerValGlnGlyAlaValAspPheGlyValSerThr 247
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TCCGGCATCGAGGACCGCATCTCCGACACGCTGGAAAGCCGCACGGCTGCC----- 7726
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TTCGACGAAGCACTCGCCAGCCGTTCTCTCGCCATTACCGGCTCGGTTTCCGGCACGGCC 7897
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CTGTTC-----7957
                                                                                                                                                                                                                                                                                                                                                        ATTTCCGGTGTCGAGGAACGTATTGCCGACACGATGGACAGCCGCACGCTGTCACTCGAC 7588
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QSYLTSDTGKVYTMLAHAAGRFN*
a 2913 c 3262 g 2082 t
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149.50
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JOURNAL MEDLINE PUBMED REFERENCE AUTHORS	TITLE		REFERENCE AUTHORS	SOURCE	ACCESSION VERSION KEYWORDS	AE009096/c	j . t	Qy 470	Db 6933	Qy 450	ø.	Оу 430	Db 7041		ОУ 390	Db 7143	ОУ 370	71		7	Оу 330	7	Qу 310	Db 7311
LL Science 294 (550), 2317-2323 (2001)  EE 21608550  D 11743193  E 2 (bases 1 to 12020)  E 3 (bases 1 to 12020)  K Wood, D. W., Setubal, J.C., Kaul, R., Monks, D., Chen, L., Wood, G. E., Chen, Y., Woo, L., Kitajima, J.P., Okura, V.K., Almeida Jr., N.F., Chen, Y., Bovee Sr., D., Chapman, P., Clendenning, J., Deatherage, G., Thou, Y., Bovee Sr., D., Chapman, P., Clendenning, J., Deatherage, G., Gillet, W., Grant, C., Gunchiner, D., Kutyavin, T., Levy, R., Li, M., McClelland, E., Palmieri, A., Raymond, C., Rouse, G., Saenphimmachak, C., Wu, Z., Gordon, D., Eisen, J.A., Paulsen, I., Saenphimmachak, C., Wu, Z., Gordon, D., Eisen, J.A., Paulsen, I.,	and Nester,E.W.  The genome of the natural genetic engineer Agrobacterium tumefaciens C58	Zhou, Y., Bovee Sr., D., Chapman, P., Clendenning, J., Deatherage, G., Gillet, W., Grant, C., Guenthner, D., Kutyavin, T., Levy, R., Li, M., McClelland, E., Palmieri, A., Raymond, C., Rouse, G., Yeng, C., Saenphimmachak, C., Wu, Z., Gordon, D., Eisen, J. A., Paulsen, I., Saenphimmachak, C., Wu, Z., Gordon, C., Eisen, J. A., Paulsen, I., Karp, P., Romero, P., Zhang, S., Yoo, H., Tao, Y., Biddle, P., Jung, M., Krespan, W., Perry, M., Gordon-Kamm, B., Lido, L., Kim, S., Hendrick, C., Thon, T., Cordon, M., Derry, M., Gordon-Kamm, B., Lido, L., Kim, S., Grant, M., Perry, M., Gordon-Kamm, B., Lido, L., Kim, S., Hondrick, C., Thon, T., Cordon, M., Diacon, M., Pandrick, C., Thon, T., Cordon, M., Diacon, M., Pandrick, C., Thon, T., Gordon, M., Diacon, M., Pandrick, C., Thon, T., Cardon, M., Pandrick, C., Thon, T., Cardon, M., Cardon, M., Pandrick, C., Thon, T., Cardon, M., Cardon, M., Pandrick, C., Thon, T., Cardon, M., Cardon, M., Pandrick, C., Thon, T., Cardon, M., Pandrick, C., Thon, T., Cardon, M., Pandrick, C., Thon, M., Pandr	E 1 (bases 1 to 12020)  S wood,D.W., Setubal,J.C., Kaul,R., Monks,D., Chen,L., Wood,G.E., Chen,Y., Woo,L., Kitalima,J.P., Okura,V.K., Almeida,Jr.,N.F.,	Agrobacterium tumefaciens str. C58 (U. Washington). ISM Agrobacterium tumefaciens str. C58 (U. Washington) Bacteria; Proteobacteria; alpha subdivision; Rhizobiaceae group; Rhizobiaceae; Rhizobium.	N AE009096 AE008688 AE009096.1 GI:17739754		0 100100011100	0 GlyGlyIleSer 473		LeuArgSerThrValAsnAsnLeuArgHisArgSerAlaProGluAla	atcgtgtcaggcgcgaagaacgcatcgccgaggcgctcgatagccgcaccctggca	Lys	GANGBACCGCATTGCCGGTGCGCTCGACAGCCGTACTGCTGCCCTTTCCGGC	#Vortoporor : 10   FV   FV   TOTOPOROR   FV   FV   FV   FV   FV   FV   FV   F	00 GlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGluSerPheIle 409	3 CGCACCATGGCGCTCGACATGAGCTTCTCCGGCGTCGAGGAAAAGATCACCGATATTCTC 7084	0 AlaThrLysAlaAlaValSerGlnLeuSerAsnLeuValGlySerValGlyValPheAla 389	5GITTCCGGCGCGGAAGAGCGGATCACCGATGTGCTCGACAGC	0 GlyGlyTyrAlaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAspSer			1 GTGGCAAGCGCCGAGACCCGTATTGCCGGCGCGCTCGACAGCCGCACGGATTCGCTG		1 GGCGCCGAGGAAAAGATCGCCGAAGCGCTCGACACGCGCACCGCAGCCCTTGGTGAGCTG 7252

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FEATURES
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          and
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                                                                                                                                                                                                                                                                                                                               EVKSVRHYRIAQSQDRTAKILSDPDRSWSDRVLAEQFNN" 2164. .3081
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located using Blastx/Glimmer"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             complement(1086. .1859)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(1086.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ELEEFSQMKSYVTDVRPESSNGASASPGLFVTVYLKTDPMAKEADSWTILIDELGEMK
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        complement (566.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /translation="MKQALYIVDVQPSFNPPASLVAEISALAGTMPSIATVERHDESVTPFERQLGWKPGRDDVSLVPADRIFIKHGYGPPREVIDHLLSLKLDRVLVCGIQADTCVLAAGFALFDAGLHPTLLPWLTVGSSLDRSGELGARLWKHHFGAVLTGPEALAG"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /product="conserved hypothetical protein"
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                                                                                                                                  antibiotic biosynthesis related
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               similarity;
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Hendrick,C.,
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VFVSLYGEVQKQIIQSELSTGFGIEAEFEDSTVICVERLSGSGQGLQTIFREPNPFFA
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3303. .5252
                                                                                                                                        SPRRRSGPDPFNECDYLLRMRRNAE"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Contest of using Blastx/Glimmer"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LRMDIKDNEIARARIGGHAVRVASGTFEL"
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JOURNAL Unpublished  2 (bases 1 to 12313)  AUTHORS Hinkle,G., Slater,S.C. and Goodner,B.  TITLE Direct Submissaton  JOURNAL Street, Cambridge, MA 02139, USA  COMMENT Approximately 800 bp of telomeric sequence missing from the left end of the chromosome and 200 bp missing from the right end.  FEATURES Source /organism="Agrobacterium tumefaciens str. C58 (Gereon)"  /strain="C58"  gene /gene="AGR_L_1737"  CDS /gene="AGR_L_1737"	2	Oy 390 GlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGluSerPheIIe 409	310 AlaLeuAsnalaGlyLysArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeu   :::

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gene
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complement(2546. 2986)

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Pseudomonas aeruginosa (strain PA01)"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /transl_table=11
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aeruginosa (strain PAO1)"
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/note="(AF007569)
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DQIKALTSEQVAGLSSAQVATLSSDELALFSTDEISAFSANAVAGLSTAALAALTTGN
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AAIGGLSSAQAGALSAQQMKVMNDAQVEAVIKAYKTV" BASE COUNT 2656 a 3789 c 3495 g 2373 t ORIGIN

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Matches:
Conservative:
Mismatches: Gaps: Indels: ----ValGln 9924 9546 215 9726 62 9486 45 9426 213

ACCESSIO	RESULT 10 AE009328/ LOCUS DEFINITIO	Qy 472 Db 10924	Db 10864	Qy 46	1082	ОУ 44	1076	Qy 427	10	4	ОУ 400 Db 10642	10	39	Db 1053	Qy 37:	Db 10495	Qy 351	10	Qу 331	10	Qy 314	10	Оу 304	оу 289 рь 10261		1	10		Db 1009	Qу 23	Db 10045
N AE009328 AE008689	c AE009328 1266	2 IleSerAlaPheSerArgSerGlu 479    :::    ::::::::::::::::::::::::::::	AAGGCAATCACCAACGCTCTCGGCGGTCTCGATGTCACCAAGCTCAGCACCGGCAAC 10923	5AlaAspIleGluGluGlyGly 471	CTGACCTCCGCAAACCTTGCCACCTTCTGCAGACGAGATC 10	6 ThrGlyAlaSerLeuArgSerThrValAsnAsnLeuArgHisArgSerAlaProGlu 464	:::   TGACGAAGACCCAGATCGCGGGCATGTCGTCCACGCAGATCA	GlnThrValLysLeuAlaLysThrValLysAspMetSerGly	ATCGGCGCCAACGCCGTTGCCGGCCTGTCTGCCGCAGCCCTGGCGGCGCTTACCACCGAC 10	hralasorsorThrThrsprTvrValalaso	0 ProAlaValLysLysAlaGluSerPheIleGlnAspLysValLysSer 415 	ATGTCGACCGACCAGATCAAGGCCCTGACATCCGAGCAGGTCGCCGGTCTCAGCTCCGCG 1	<pre>TrpThrThr</pre>	AAGGCACAGGTTTCGGCGCTGTCGACGACA	ThrLysAlaAlaValSerGlnLeuSerAsnLeuValGlySerValGlyValPheAlaGly 390	5CTCGATGTGACCAAGCTCAGCACCGGCAACGTCGCAGCCCTC 10536	GlyTyrAlaGlyValSerLysLeuGlnLysMetAla	GCCACTTTCTCCGCCGATGAAGTCAAGGCCATCAGCACCAAGGCACTGGCCGGC 10	AlaValArgSerLeuValSerAlaThrSerLeuThrLysAs		GlyLysArgMetAlaGlyLeuProLeuAspValAlaThrAs		AlaSerTyrSerGlyAlaAlaLeuAsnAla	SerGLUGIU	AND OF THE PROPERTY OF THE PRO	rargGlyGlyAlaPheValLeuGlyMetLysAspLysGluProLysAlaAlaLeu 288	AAAACCCAGGCCGCATCGCTGTCCTCAACACAGTTCGCAGCCATGTCGACCGAC	AsnAlaGlyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeu 270	3GGTCTCGATGTTACCAAGCTCAGCACCGGCAACATCGCCGCGCTGACC 10140	- D	::: :::::

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REFERENCE
AUTHORS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Submitted (27-SEP-2001) Department of Microbiology, University of Washington, 1959 NE Pacific Ave, Box 357242, Seattle, WA 98195-7242, USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   The
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Agrobacterium tumefaciens str. C58 (U. Washington)
Bacteria; Proteobacteria; alpha subdivision; Rhizobiaceae
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                                                                                                                                     LATESSADLAAITGKAMSGLMTDVIAALTAAQIAAFGASAIAGLTSDOVEALSGSQVS
LLSTTQIKALSSTQVAALGSDVAALSTSQTAVLSAASIKGLTPEQIAILIRPDQFSALT
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GAIAALTTAQIAALTTGAIASLTDDQIEALSTSQVAALSPTQVKSLSSTQLAALSVED
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="ina"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   location/Qualifiers
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CDS

gene

complement (9292.

/note="Atu3977"

gene-"ina

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              complement(5496.
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QAAALGADDLTTFSAEQIISLSSSAIPGLSTSTLAGLTTSQAAAFTPGQIAAMTSAQV
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QLNGLTSAQIGALTSRQVAALSATGIAALTKGQIAALDAKAVAGLGSAQAGALSVEQV
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complement (9292.
                                                                                                                                                                                                                        ALCEVLELHDKDSLEVFAYYCGNVRGTDSTQERIKAAVHCWRDIHGVDDATAASQIIA
DEIDILIDVNGYTKDARAKIFAYRPAPVIVSFCGYPGSMGSPFHQYLISDGYMIPPEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TERDGETGVMVHVYGPHIFHTDDREVWDYVNSFQTFMPYKNRVKTTSGEQVYSLPVNL
HTINQFFGKNFRPDEARTFIEDKADKSITDPQTFEEQALRFVGRDLYEAFFKGYTEKQ
WGCSPTELPASILKRLPVRFNYDDNYFFHKYQGMPESGYTDMIERILDHPNITVKLGT
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LSVSGIGSLSSAQIAALSTAGVAGLTTDQIAALSTSQVEALTSVQIAALSSKQIAALG
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                                                                          <u>ARAIGFERDRQSLLEVRESIARQRETSVLRDIPALARRLEELFWQMQGECERGETPVP</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /codon_start=:
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located using Blastx/Glimmer"
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   .12261)
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CDS

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VMNDAQVEAVIKAYKTV"

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Matches:
Conservative:
Mismatches:
Indels: 2683 t -----ValGln 215 62 45 11353

RES AE0 LOC DEF	Ş	, Q	Ф	Qy	Дb	γQ	망	Ωy	B 8	망	Qy	당 5	00	B 6	B 5	 y Q	p Qq	Db Qy	Db Qy	Db	Qy	문 5	0	망	ο <sub>Q</sub>	Db Qy
RESULT 11 AE003482/c LOCUS DEFINITION	T04.13	47	10473	465	10515	446	10575	427	416 10635	10695	400	S	39	371 10800	10842	331 10896	314 10956	304 11016	289 11076	11136	271	9	254	4	236	216 11292
301769 bp DNA linear INV 04-OCT-2000 V Drosophila melanogaster genomic scaffold 142000013386045 section 16 of 17, complete sequence.	CBCCBCBCTBACCAMABCBCA	eSerArgSerGlu 479	AAGGCAATCACCAACGCTCTCGGCGGTCTCGATGTCACCAAGCTCAGCACCGGCAAC 10414	GluG 	CTGACCTCCGCAAACCTTGCCACCTTCTCTGCAGACGAGATC 10474	- rv	AATGCATCCGCACTGACGAAGACCCAGATCGCGGGGCATGTCGTCCACGCAGATCAATGCC 10516	LysThrValLysAspMetSerGlyGluAlaIleSe	ThralaSerSerThrThrSerTyrValalaAsp 426 :::   :::: ATCGGCGCCAACGCCGTTGCCGGCCTGTCTGCCGCAGCCCTGGCGCGCGC	GCTCTCTCCACCGATGAGATCAA	ProAlaValLysLysAlaGluSerPheIleGlnAspLysValLysSer 415	TGTCGACCGACCAGATCAAGGCCCTGACATCCGAGCAGGTCGCCGGTCTCAGCTCCGCG 10	ThrThrAlaGlvLeuAlaThrAsp	ThrLysAlaAlaValSerGinLeuSerAsnLeuValGlySerValGlyValPheAlaGly 390 :::                      AGCAAGGCACAGGTTTCGCGGCTGTCGACGACACAGTTCGCTGCC 10756	GIYTYTALAGIYVAISETLYSLEUGINLYSMERAIATNTLYSASNILETNTASPSETAIA 3/0	AlaValArgSerLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGly 350	GlyLysArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLys 330 ::::::	AlaSerTyrSerGlyAlaAlaLeuAsnAla	SerGluGluThrAspTrpLeuAspAlaTyrLysAlaIleLysSer 303    :::      :::   aGCGACGAACTGGCTCTCTCCCACCGATGAGATCAGCGCCTTCAGCGCCAATGCGGTC 11017	AAGGCCCTCACATCCGAGCAGGTCGCCGGTCTCAGCTCCGCGCAGGTTGCGACGCTCAGC 11077	rgGlyGlyAlaPheValLeuGlyMetLysAspLysG	AAACCCAGGCCGCATCGCTGTCCTCAACACACTTCGCAGCCATGTCGACCAACACTC 11	SerValGlnSerArgAspGlr		lnGlyAlaValAs	ThrPheSerAlaLeuAsnValValArgThrValLeuAlaProAlaLeuAlaSerArgPro 235

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COMMENT
FEATURES
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AUTHORS
TITLE
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MEDLINE
PUBMED
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Rockville, MD, USA
On Oct 9, 2000 this sequence version replaced gi:7292521.
Location/Qualifiers
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Adams, M.D., Celniker, S.E., Holt, R.A., Evans, C.A., Gocayne, J.D., Amanatides, P.G., Scherer, S.E., Li, P.W., Hoskins, R.A., Galle, R.F., George, R.A., Lewis, S.E., Richards, S., Ashburner, M., Henderson, S.N., Sutton, G.G., Wortman, J.R., Yandell, M.D., Zhang, O., Chen, L.X., Sutton, R.C., Rogers, Y.H., Blazej, R.G., Champe, M., Pfeiffer, B.D., Wan, K.H., Doyle, C., Baxter, E.G., Helt, G., Nelson, C.R., Gabor Man, K.H., Doyle, C., Baxter, E.G., Helt, G., Nelson, C.R., Gabor Man, K.H., Bayer, R.G., Baxter, E.G., Man, M. H., Bayer, R.G., Champe, M., Feiffer, B.D., Wan, K.H., Doyle, C., Baxter, E.G., Helt, G., Nelson, C.R., Gabor Man, K.H., Doyle, C., Baxter, E.G., Man, M. H., Bayer, R.G., Champe, M., Feiffer, B.D., Man, K.H., Doyle, C., Baxter, E.G., Helt, G., Nelson, C.R., Gabor M. H., Bayer, R.G., Champe, M., Feiffer, B.D., Man, K.H., Doyle, C., Baxter, E.G., Helt, G., Nelson, C.R., Gabor M. H., Man, K.H., Doyle, C., Baxter, E.G., Man, M. H., M. H., Man, M. H., M. H., Man, M. H., M. H., Man, M. H., Man, M. H., Man, M. H., M., M. H., M., M. H., M. H., M. H., M., M. H., M., M. H., M., M. H., M., M., M. H., M., M., M.,
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Neoptera; Endopterygota; Diptera; Brachycera; Muscomorpha;
Ephydroidea; Drosophilidae; Drosophila.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Andrews-Pfannkoch,C., Baldwin,D., Ballev,R.M., Basu,A.,
Baxendale,J., Bayraktaroglu,L., Beasley,E.M., Beeson,K.Y.,
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AE003482.2 GI:10
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                                                                                                                                                                                                                                                                                                                                                       /map="64B16-64B17"
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                                                                                                                                                                                                  .598,1036. .1148,1227.
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                                                                                                                                                                                                  .2472,2568. .3087)
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SGAGAKGAKENNI"
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DEDKVDKDDRLPQSDKDKRIVPENEYSDSEDEGEGGRRDNRSYKGQRKRPRLDKDTNS
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                                                                                                                                                                                                                                                                                                                gene product"
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evidence=not\_experimental

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Percent Similarity:
Best Local Similarity:
Query Match:
DB:
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Pred. No.:
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                                         180
GGGCAGGTACTCGCCGGAAGGCAGCTCAGAGACATCACGGCGGCGACGGATCACACGACG 271082
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39.32%
23.70%
6.09%
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Indels:
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Matches:
Conservative:
                                     -- TyrLeuSerThrSerProAspLysLeu
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Proc. Natl. Acad. Sci. U.S.A.
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AL591788.1 GI:15074579
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Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        des Sciences Agronomiques de Gembloux, Avenue Marechal Juin 6, B-5030 Gembloux, Belgium. E-mail:Jerome.Gouzy@toulouse.inra.fr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Laboratoire de Biologie Moleculaire des Relations Plantes-Microorganismes, UMR215-CNRS-INRA, BP27, F-31326 Castanet,
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QRRLMEVFAGYTEHADVQAGRLLEALDELGIRDNTLIFYVWGDNGSSAEGQNGTISEL
LAQNGIRTEIKDHIRAMNELGGMDVLGSPKADNMYHAGWAAGSTPHRSTKLVAAHFG
GTRTPLVVSWPGKIKEDQTPRSQFHHLNDIVPTIYDVLDIQPPKLVDGISQDFLDGVS
MTYTFDSPEASGQKKEQYFEINGSRAIYQDEWIASVFGPRIPWKAGLDPAIFKWSPDN
DLWELHDLSQDYSQAKNVAADHPEKVEALKRAFGVQAEANKVFPYGGGLWSAVFHPED
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/translation="MpaQphlpanapmivvimldDvgpalpdteggvietptlsrlaq
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VLGYYGYATAAFGKWHRTPANETTAVGPYTDWPAGEGIGFDYFYGFLAGESSQWEPAV
VENTYKOZATAAFGKWHRTPEDMTNKAVTWMKQVHALTPDRPFFMYWAPGAAHGPHHIF
                            LWVENGKLTYEYNLFEIERTRLESSDPLPSGKVNIEVETRKVSSDHAAPLDVVIRIDG
KEVAKGHVPRSAPLAFTANDAFDVGKDSYSPVALAYFDRKPFAFNGKIESLKVEYLK"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /product="CONSERVED HYPOTHETICAL PROTEIN"
/protein_id="CAC46225.1"
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/note="Product confidence : hypothetical
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/strain="1021"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /evidence=not_experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /gene="SMc00954"
                                                                                                                                                                                                                                                                                                                                                                                                                                                             /db_xref="GI:15074580"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /transl_table=11
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       db_xref="taxon:382"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        codon_start=
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Y Homology
Y FrameD"
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/note="Product confidence : hypothetical
Gene name confidence : hypothetical
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4728. .5522
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/function="miscellaneous; unknown"
/functe="Product confidence : hypothetical
Gene name confidence : hypothetical
predicted by Codon_usage
predicted by FrameD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KFRNVMLAAPDVDVDVFGSQIADMGKQRPRFTLFVSRDDRALAVSRRVWGNVSRLGAI
DPEQSPYKEELAANGITVVDLTKIKAGDNLHHTKFAESPEIVRLIGSRLSSGQTLTDS
RLGLGDHIVAATAGAAHTVGTAAGLVVAAPAAIVDQNTRRNYVHHVEALAEPSGATR"
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GYDRESTNYTRNAVERLFQYLARDPEVKEVSILAHSMGNWLALESLRQMAIRNDGLPA
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5519. .5737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /translation="mkiatynvngvngrlgvllrwleeaspdvvclQelkapdpkfpv
kaieaagygaiwhgQkswngvailardreptltrkglpgdpddthsryieaavegmvi
gClylpngnpypgpkfeyklawfhrltayaaelleldvpvilagdynvmpteldvykp
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4728. .5522
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/db_xref="GI:15074581"
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/gene="SMC00955"
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predicted by predicted by
                                                                                                                                    /function="miscellaneous; unknown"
/note="Product confidence : hypoth
                                                                                                                                                                                                                                         /gene="SMc00958"
                                                                                                                                                                                                                                                                                                                                                                                                                                               HLLLSPHVTLRLSAAGVDRHVRGWEHTSDHAPAWIELSDGPAEEDQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ERWVNDALFRIEVRDAYHRLLEQGWTDALRQLHPGERVYTFWDYFRNAFARDAGLRID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /product="PROBABLE EXODEOXYRIBONUCLEASE III PROTEIN"
/protein_id="CAC46228.1"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /gene="xthA1 OR SMc00956"
/EC_number="3.1.11.2"
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/protein_id="CAC46227.1"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /transl_table=:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /transl_table=11
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'db_xref="GI:15074583"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'function="macromolecule metabolism;
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                                                                                                     name
                                                                                                confidence : hypothetical
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     Codon_usage FrameD"
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                                                                                                                                              hypothetical
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Alignment Scores:
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                                                                                                        (TRCE) PROTEINS

/PIOCHCI- FROM THE INNOCATION REFAIN CONFIDENCE FROM THE CONFIDENCE F
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complement(6137. 9652)
/gene="mfd OR SMc04450"
complement(6137. 9652)
/gene="mfd OR SMc04450"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note="Product confidence : probable Gene name confidence : probable predicted by Codon_usage predicted by Homology predicted by FrameD"
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/note="Sm-4 OR SMc04555
REPEAT SM-4
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AYEKDPDPAADISEQVIEEPSNNWPAAD"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   restr./modif."
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             predicted by Homology"
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/transl_table=11
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62	43 GlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAlaHisArgPheSerValIle 62	AlaAlaHis 	LSH1SValPhe	::: ::::::::::::::::::::::::::::::	ThrAsp	GlnAlaIle	43	Ş
42 184971	Qy 23 AspAlaSerLeuAlaSerSerSerValArgSerValSerThrThrSerCysArgAspLeu 42 :::    :::     Db 184912 CCGGAAACCAATGCCGCCGACCGCGTCATGACGGTCGGCCAGGCCGTGCGCCGCGAAGTC 184971	SerThrThr 3GCCAGGCC	aSerLeuAlaSerSerSerValArgSerValSe :::    ::: AACCAATGCCGCCGACCGCGTCATGACGGTCGG	SerSerSerVa ::: GCCGACCGCGT	LeuAla       AATGCC	AspAlaSer ::: CCGGAAACC	23 184912	B 8
22 184911	Qy 3 IleAsnGlnSerAlaGlnGlnProProGlyValAlaMetGluSerPheArgThrAlaSer 22 :::    :::    :::	MetGluSer     ATG	oGlyValAlaMet          :CGAGGTTGCGATG	GlnGlnProPr ::: CGTTCGATGG(	GlnSerAlaGlnG :::    ::: :AGCGCCGCGCGTT	IleAsnGln::: CTGCGCAGC	3 184861	ρ γο
		Ü	US-09-825-414-66 (1-487) x SME591788 (1-306250)	х SME591788	-487)	-414-66 (1	-09-825	Sn
	306250 106 84 208 162 17		Length: Matches: Conservative: Mismatches: Indels: Gaps:	1.71e+03 146.00 33.93% 18.93% 6.07%		Pred. No.: Score: Percent Similarity: Best Local Similarity: Query Match: DB:	Pred. No.: Score: Score: Percent Simi Best Local S Query Match: DB:	Pre Sco Per Bes Que DB:

ω .	AATTCGGCGCTTTCCGAGCAGTCGCTCACCCTG		문 5
346	GlvLeuLvsAlaValArqSerLeuValSerAlaThrSerLeuThrLvsAsnGlvLeu	327	٥
326 185922	SerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAspValAlaThr ::::	307 185863	DP GA
306 185862	AlaLeuSerGluGluThrAspTrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyr	287 185806	рь 0у
286 185805		276 185746	dg Vy
275 185745	gaspGlnLeuargGlyGlyAlaPhe	266 185686	p dy
265 185685	SerThrAlaGlyGlyLeuValAlaAsnAlaGlyPheGlyAspArgMetLeuSerValGln	246 185626	D 04
245 185625	ValLeuAlaProAlaLeuAlaSerArgProSerValGlnGlyAlaValAspPheGlyVal :::       :::   ::: :::       :::     ::: :::       :::       :::	226 185584	Db 04
225 185583	GlnValValAspMetGlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThr ::::    ::: CGGACGCGCGATCTCAATGAGAGCCTCAGG	206 185554	D 04
205 185553		186 185494	D 04
185 185493	ValGlyThrLysMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerPro	166 185434	Дb
165 185433		158 185374	D 04
157 185373	LeuAlaThrProLeuLysProLeuThrProLeuIleSerGly	144 185314	Db Oy
185313		185313	рь
143	${\tt ProPheAlaAlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrp}$	124	Qy
123 185313	AlaLysAlaGluLysPheAspArgLeuAlaThrThrAlaSerSerAlaPheGluAsnThr	104 185272	DB Qy
103 185271	ThrargalaasnargLeuTyrSerGluGlyGluThrProalaThrIlealaGluThrPhe	84 185212	Db Qy
83 185211	ASPAIALEUVAIGlu ::: CGCACGGCGATCGCTGGCGCGCATACCAAGCTGAAGGACGACCTCGAAACGGCAAGCGAG	79 185152	D Q
78 185151		67 185092	D 04
185091	GIYSELFICASP: ::: GTGCATTCGGAAGTCAGCGCACTCGAACGCAACGCAGCTACAGCGAAAAACGAACTGCGTGTCCGC	185032	B 2
185031	CGGCGATGAACGAGGGCATAGAGCGCACCATCGCCCGGGCAACCGAGCTCGAAGCGCTC	184972	₽ 2

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REFERENCE
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Nierman,W.C., Feldblyum,T.V., Paulsen,I.T., Nelson,K.E., Eisen,J.,
Heidelberg,J.F., Alley,M.R.K., Ohta,N., Maddock,J.R., Potocka,I.,
Heisen,W.C., Newton,A., Stephens,C., Phadke,N.D., Ely,B.,
Nelson,W.C., Newton,A., Stephens,C., Phadke,N.D., Edvin,M.L.,
Laub,M.T., DeBoy,R.T., Dodson,R.J., Durkin,A.S., Gwinn,M.L.,
Haft,D.H., Kolonay,J.F., Smit,J., Craven,M., Khouri,H., Shetty,J.,
Berry,K., Utterback,T., Tran,K., Wolf,A., Vamathevan,J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Nierman, W.C., Feldblyum, T.V., Laub, M.T., Paulsen, I.T., Nelson, I
Eisen, J., Heidelberg, J.F., Alley, M.R., Ohta, N., Maddock, J.R.,
Potocka, I., Nelson, W.C., Newton, A., Stephens, C., Phadke, N.D.,
Ely, B., DeBoy, R.T., Dodson, R.J., Durkin, A.S., Gwinn, M.L.,
Haft, D.H., Kolonay, J.F., Smit, J., Craven, M.B., Khouri, H.,
Shetty, J., Berry, K., Utterback, T., Tran, K., Wolf, A., Vamathevan
Ermonaeva, M., White, O., Salzberg, S.L., Venter, J.C., Shapiro, L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Complete genome sequence of Caulobacter crescentus Proc. Natl. Acad. Sci. U.S.A. 98 (7), 4136-4141 (2
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Caulobacter crescentus CB15
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                                                                                                                              Submitted (31-JAN-2001) The Institute for Medical Center Dr., Rockville, MD 20850,
                                                                                                                                                                                                                       Ermolaeva, M., White, O.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Fraser, C.M.
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                                                                                                                                                                               Direct Submission
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                     /db_xref="taxon:190650"
                                            /strain="CB15"
                                                                 /organism="Caulobacter crescentus CB15'
                                                                                                              Location/Qualifiers
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359 of the
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                                                                                                                                                        Research,
                                                                                                                                                                                                                         Venter, J.C. and
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EWISTIEIENIAVGHPKVALAAVVGQPHPKWDERPVLLVKLKEGETAAPQEFIDYLQG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /translation="mQGLMQHGALTLDKIIDHAAMWHGGREVVSRSVEGPIVRTTYGQ IRDRAKRVSNALLGMGIKSGDRVGTLARNTGRHEEAWYGIMGIGAVCHTLNPRLEPEQ IAWIADHAGDRAIFTDLTFLPIIALIPRLEPEQ IAWIADHAGDRAIFTDLTFLPIIALIPRLEPETDRAHMPADEAWHADLARHGEDEGTALGRCLYTSGTTGDPKGYMYSHRSNELHTLITL CHELLCYEELVEGHADCAWGGEDEGTALGCLYTSGTTGDPKGYMYSHRSNELHTLITL CHELLCYEELVEGHADCAWGGEDEGTAAGLCYTSGTTGDPKGYMYSHRSNELHTLDSEQ VTFSAAVPTVWQMLLQHLEATGATLPTLKKVVIGGAACPESIIRAFHDKYDVEYVHAW
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LAPIDMSLQDLVGEVVDAWRDAAVFKNLSLSVDYAPDLPGVHADPLRIRQVVTMLVS
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REHGGAGLGLSIARALARQMGGDLVLVPSGRGACFVFTFAAPACAAPVAAPEEVGANG
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GSRLDIRSIGRDAGPDLGRNCDRIGALMTAVKAR"
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FGNLKIRGPIIAAEYFRGAGGKILDDEGFFDTGDVATIDEYGFMQITDRAKDVVKSGG
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2258. .5278
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                                                                                                                                                                       complement(6513.
                                                                                                                                                                                                                                                                              VREGRVVTAGEAGLDAEYRLV"
                                                                                                                                                                                                                                                                                                          PFIDAYVAHRRAREAQILEALGAGPTTIKAMVPSLYAAVDPRLHPAAAHSVLAHMIQL
                                                                                                                                                                                                                                                                                                                                              LPAPSDHGEAAGPSLEEGDDARFRPDVILADGEVLAGPGWTLETLATPGHTSNHLCFA
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2258. .5278
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                                                                                                                                                                                                       /gene="CC0924"
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Alignment Scores: Pred. No.:	BASE COUNT 2203	gene CDS	gene CDS	·	gene CDS
29.2 Length: 13040	φ	/db_xrer="G1:13427196" //db_xrer="G1:13427196" //translation="MODGARLKRRREADAVRPSRLAFGSHLRWRGALSLNTPRPHPSP //translation="MODGARLKRRRETPHPSAFGRHLLPQGEKEQIASGISAITVSLIRS PSLRLFIAKKNGGLVRARROSPSKRIRP" complement(1114012924) //gene="CC0927" complement(1114012924) //gene="CC0927" //note="identified by match to TIGR protein family HMM TIGRO705"	SNTAFRAASPATDISEFWLPAGGGTTFGALDAQTGLPTAGLGRLVSGGSLVACPATVG SAAPVGAFSCQVRNNGVSPNPDAVAAKNLKSTYQDBYILGVEHRFWDLWRGGVSLIYR NLGRISEDALLDVGJQNWCAANGVAKTNAARTGCADVWSCEHQYLII INQSDVKNVLS DPLPGETQIRTITVSAQQLQFPKAKREYLGLEFSFERTFDGKWGLQGSYTISESKGNF EGASNSDNGGTDAGITVOSPOHLAFIPGTYGLLPHRRGHQLKFGSYAVTDDLLLGTNL SVISPRKYCGIGNAPENPPUNDGFLEDDFETANASYGAAARFCGGKVANNGSVFFGGW VTRFDLSARYAVPSRFIPSLPYMDKSEGGLVLRADVFNVFNLKSGIEKDEFGEKTGGL VNDDPGKVTAYQPPRYVRFGFDWSF complement(1069011082) /gene="CC0926" /note="identified by Glimmer2; putative" /codon_start=1 /transl_table=11 /product="hypothetical protein" /protein_1d="aak22910.1"	/LIGHT-LCDIE-11 /Product-"OmpA related protein" /protein_1d-"AAK22909.1" /protein_1d-"AAK22909.1" /db_xref-"GI:13422195" /db_xref-"GI:13422195" /db_xref-"GI:13422195" /tabs18ation="MSTKCCVVRARLITSTLLAGLASLAAPLAITAVATAVPTLASAQ /translation="MSTKCCVVRARLITSTLAGLASLASDGGERIALITSGGYSVA IKRAGFVPASDGNVKVGIGAASNYGFTIAAEGVEVSEIIVTGKANPOLDEAGTTTGLS IDVETLSKOYPIARSVTALTLLAPSAVPGDTVGTFVNGGOSQAAVGGASIGENVFEVN GLNIINFVNGIGATLVPFEFYKSVEIKTGGYPAEFGRGTGAVINAYTKSGSNDFTFAL HGWYEPNSLGDKSPNTTIFONSLYSRTDRSLIVEAGGPIIKDRLEFYGLASFQNLETS TATTGGTYVQDRTADFFYAFKLDGYITDKHLLELTYFDTSKKKKDQFTFNPATDVIS PTRASAESLYQGGENYVARYTGTFTDWLTVSAAYGRSHONAAVGNLSGIARVQDTRV TPTVDRSLQATAAGTFPSIAEREFYRADADLYFKLLGSHIIRFGYDQENTLLTQFTRR NGGRNYTYRRAGAAGALGGAVAAGQEYIEGRKFQTGGGFAGKNKAYYIQDAWDLNDRL TLLSLGVRKDOFVARAGGALGGAVAAGQEYIEGRKFQTGGGFAGKNKAYYIQDAWDLNDRL TLLSLGVRKDOFVARAGGALGGAVAAGQEYIEGRKFQTGGGFAGKNKAYYIQDAWDLNDRL TLLSLGVRKDOFVARAGAGALGGAVAAGGEYIEGRKFQTGGGFAGKNKAYYIQDSFGTTLLPVA	/translation="MSDFREVTESLSVSPQVDPADMARAAAQGFVLVINNRPDGEDPG QPSSASVEAAARAAGMDYLHVPVRGGPTPDQVEIMRAAFEAAGGPVLAFCRSGTRSIV TWSIGQALAGVDRETLVAQGYAAGYDLSGVLPA" 752610693 /genc="CC0925" 752610693 /genc="CC0925" /foctc="similar to Sp:p38370 GB:S64103 PID:402804; identified by sequence similarity; putative" /codon_start=1 /codon_start=1
Qy 257 heGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGlyAlaPheValL 277	178 uHisTyrLeuSerThrSerProAspLysLeuHisAspAlaMetAla	Db 4846 CGTCTTCCAGTCGGTGGCCACGTCGGTGGATCGGCGGGGCCTGGCCAAACAGCGCCTTGGC 4787  Qy 149 sProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAs 164	5065 CATGCCGGACGCCAGGACGGCGGCCTTGGCC	Qy 23 AspAlaSerLeuAlaSerSerSerValArgSerValSerThrThrSerCysArgAspLeu 42	ore: 145.00 Matches: 122 rcent Similarity: 36.14% Conservative: 58 st Local Similarity: 24.50% Mismatches: 178 ery Match: 6.02% Indels: 141 : Gaps: 24 -09-825-414-66 (1-487) x AE005769 (1-13040) 3 IleAsnGlnSerAlaGlnGlnProProGlyValAlaMetGluSerPheArgThrAlaSer 22 :::   ::::::::::::::::::::::::::::::

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REFERENCE
AUTHORS
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99081722
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AF067776
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Abiotrophia defectiva extracellular matrix binding protein (emb)
                                                                                                                                                                                                                                                                                                       Direct Submission
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                                                   /gene="emb"
/note="adhesin"
                                                                                                                                                         /organism="Abiotrophia defectiva"
/strain="NVS-47"
/db_xref="taxon:46125"
                                                                                                                                                                                                                  Location/Qualifiers
1. .6413
                /codon_start=1
/transl_table=11
                                                                                                       note="contains 17
                                                                                                                         /gene="emb"
'product="extracellular matrix binding
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ORIGIN
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Best Local Similarity:
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                                                   CGTCAGGCTATTCGCGACAATGCCAACCTAACAGCCGAAGAACAAGCCGATGCCCTGCGT 2713
                                                                                                                         GCCAAGTACCCAGAGGCTTTGGGCCCAT-----GTGCGCCAAGCAGCCGATGCTAAG 2653
                                                                                                                                                       LeuLysHisHisValPheAlaAlaHisArgPheSerValIleGlySerProAspGluArg
                                                                                                                                                                                              GCCGTGACCAGTGCCCGCGACCAAGGGCTGAATGCGGTCAATAATTTACCAACACCAGCA 2602
                                                                                                                                                                                                                  SerThrThrSerCysArgAsp-----LeuGlnAlaIle-----ThrAspTyr
                                                                                      AspAlaAlaLeuAlaHisAsn----
                                                                                                                                                                                                                                                                                                     SerPheArgThrAlaSerAspAlaSerLeuAla----SerSerSerValArgSerVal
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 -ValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThrProAla
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14.1 143.50 36.22% 22.16% 5.96%

Length:
Matches:
Conservative:
Mismatches:
Indels:

6413 123 78 249 105 23

(1-6413)

----ProGlyValAlaMetGlu

16

2482

34

48

----GluGlnIleAspAlaLeu---

81

68

97

Gaps:

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ANDING VNOAKT AGTTA INNI NPQGTQKAQAI AAI EAAEQAKRLELQGRNDLITTEEN
NALADLITAKAQAAKDAVNQARINTGVAGAKDNOVAQIGGI NPTA VYKEDARNALDQAA
RDKEABEQAWIKLTDEEKAAAI KYQDDARDAKAA IDRAGSNCDVNIAN,VOGGKAIQA
IKALDDSQPSAKDTAKAAI QNAADAKKAAI TANNALTQEEKAAAI KQVEDEAAKAQAA
VDASRSKADVDRAKDGGLQK ISDVPAVQPKLINI TAVVDQAATDKKAV INNDTTLTQE
EKEAAI RKVDEEAAKARA INDAT SINDLVAAKQAQGTQAI INVPQTPAKKANAKAAVE
QAADAKKQAI ENDPNLT RQEKDAAI AKVDQETINKARQAI DAATTNADVTAKQNEGTQA
INAVPQTPAKAKTDAKNAVTQAAEDKKSAI ENDPNLT REKDAKAK VDAEATKAKNAI
DAATSNDETTAKQNEGTQAI INAVPQTPAK KTDAKNAYTQAADRKKDAI ENDPNLTEE
KVAAKAKVDAEAKKAKDAI DAAT SNADVTAKQNEGTKAI NDVPQTPTAKTDAKNAYTQA
                                                                                          ATSNADYTAQKDAGKDAI NAVPQTPTAKTDAKNAVDQAATDKKSAI ENDPALTREEKD
AVKAKVDAEAKKAKDAI DAATSNADVTAKQTEGTQAI NAVPQTPTAKTDAKNAVDQAA
TDKKNAI ENDPALTREEKDAAKAKVDAEAKKAKDAI DAATSNADYTAKQNEGTKAI ND
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QAFMDQYTAKDAMAKVASAANNQAVTSARDOGLNAV VNILPTPAAKY PEALGHVRQA
ADAKRQA IRDNANLTAEEQADALROVDAAQTAAEAA INQNHTNATLAKADSOGVKAID
DINPQPRSKPAANQALEQVAAAKRQAINNNNQLTDEEKAQAIQOVDQALANAKTQVQA
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AALRIV PRY NGGQVV PEHRMIGGNATHAAPT I AVTPSTTLHVDGI SDAT I KSMYRV
NDLEDDARQT NGTPVQAD I SYS KANGQTVAA I DPTVEGEYTVTLRANDSODKLSANTV
QVKVAFTLPREEAKNAVNNAAKAKNTA I DNNNNLTAEEKAAEKAKVEAAKNATLAGI D
                                                        VPQTPTAKTDAKNAVDQAATDKKSAIENDANLTREEKDA'
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NAQAAQVVASQASTSAPEASQGPEQAQATEVQASSSSQESLESSSSEQASLATSESQA
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CGGGCCAAGGACCAAGGGCTCCAAAAAATTAGCGATGTGCCAGCCGTCCAACCACCCAAG
                    ValPheAlaGlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGlu
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                                                                                           AspSerAlaThrLysAla---AlaValSerGlnLeuSerAsnLeuValGlySerValGly
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Submitted (29-MAY-2002) DOE Joint Genome Institute, 2800 Mi Drive, Walnut Creek, CA 94598, USA
On May 29, 2002 this sequence version replaced gi:12965319.
Draft Sequence Produced by DOE Joint Genome Institute
www.jgi.doe.gov
Finishing Completed at Stanford Human Genome Center
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334 11396	LysArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLysAlaValArgSer:ATTGAGGGAGAGCCAACATCCTCCCTGACTGCTGGAGGAAAAAGAGAACAGCACC:	315 11449
11450		11450
314	LeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGly :	295
294 11450	PheValLeuGlyMetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAspTrp :::	275 11473
274 11474	AlaGlyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGlyAla :::	255 11506
254 11507	ProSerValGlnGlyAlaValAspPheGlyValSerThrAlaGlyGlyLeuValAlaAsn : ::	235 11539
234 11540	GlnThrPheSerAlaLeuAsnValValArgThrValLeuAlaProAlaLeuAlaSerArg :	215 11590
214 11591	ServallysargHisSerProAlaLeuGlyArgGlnValValAspMetGlyIleAlaVal ::::::         :::         :::             ::	195 11641
194 11642	SerProAspLysLeuHisAsp	184 11701
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163 11747	LeuAlaThrProLeuLysProLeuThrProLeuTleSerGlyAlaLeuSerGlyAlaMet 1 ::::::   :::	144 11794
143 11795	AlaAlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrp 1 ::::::       ::: TTGGTCACAACCATA	126 11842
125 11843	ThrProPhe           CCCTGACACCTTTC	114 11902
113 11903	AlaGluThrPheAlaLysAlaGluLysPheAspArgLeuAla	100 11962
99 11963	GlyGluThrProAlaThrIle (	93 12022
92 12023	AlaHisAsnGluGlnIleAspAlaLeuValGluThrArgAlaAsnArgLeuTyrSerGlu ::: ::: ::: ACAGAATCTTCAGGAGTGACCATCACCACCCAAACAGGTCCTACTGGAGCTGCAACACAG	73 12082
72 12083	AlaalaHisargPheSerVallleGlySerProAspGluArgAspAlaAlaLeu ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	55 12142
54 12143	CysargAspLeuClnalaIleThrAspTyrLeuLysHisHisValPhe :	12202
38 12203	AspAlaSerLeuAlaSerSerSerValArgSerValSerThrThrSer :	23 12262
12263	AGCACATCCCAGGTGGCCAGC	12307

Search completed: January 31, 2003, 06:35:09 Job time : 3603.21 secs

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P. syringae pv. to Drosophila melanog Lactobacillus rham Drosophila melanog Moraxella catarrha

Nucleotide sequenc P. syringae pv. to P. syringae pv.tom Pseudomonas

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Drosophila melanog Corynebacterium gl Corynebacterium gl Drosophila melanog

Drosophila melanog Bacillus subtilis

DNA encoding novel rsaA gene. Caulob Drosophila melanog C glutamicum codin C glutamicum codin AAD20405 ABL29757 AAD20438 AAD20408 AAF55683

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Command line parameters:

-MODEL-frame+_p2n.model -DEV-xip
-Q-/cgn2_1/USPTO_spool/US9825414/runat_28012003_161741_26075/app_query.fasta_1.1294
-Q-/cgn2_1/USPTO_spool/US9825414/runat_28012003_161741_26075/app_query.fasta_1.1294
-DB-N_Geneseq_101002 -QFMT-fastap -SUFFIX-p2n.rng -MINMATCH-0,1 -LOOPCL-0
-LOOPEXT-0 -UNITS-bits -START-1 -END-1 -MATRIX-blosum62 -TRANS-human40.cdi
-LIST-45 -DOCALIGN-200 -THR_SCORE-pct -THR_MAX-100 -THR_MIN-0 -ALIGN-15
-MODE-LOCAL -OUTFMT-pto -NORM-ext -HEAPSIZE-500 -MINLEN-0 -MAXLEN-200000000
-USER-US09825414_@CGN_1_1_103 @runat_28012003_161741_26075 -NCPU-6 -ICPU-3
-NO_XLPXY -NO_MMAP -LARGEQUERY -NEG_SCORES-0 -WAIT -LONGLOG -DEV_TIMEOUT-120
-WARN_TIMEOUT-30 -THREADS-1 -XGAPOP-10 -XGAPEXT-0.5 -FGAPOP-6 -FGAPEXT-7
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Copyright (c) 1993 - 2003 Compugen
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Shrimp white spot
Shrimp white spot
Nucleotide sequenc
Caulobacter rsaA g
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Pred. No. is the number of results predicted by chance to have score greater than or equal to the score of the result being pr and is derived by analysis of the total score distribution. RESULT 1
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XX Sysel a a o a a Conserved Effector Loci; CEL; cytostatic; antibacterial; gene therapy; Exchangeable Effector Loci; EEL; disease resistance; transgenic plant; Exchangeable eukaryotic ce Pseudomonas Pseudomonas syringae pv. tomato strain DC3000 HopPtoA2 DNA. 03-JAN-2002 AAD20438; AAD20438 standard; DNA; 1464 131 130.5 130.5 130 129.5 129.5 129.5 135 132.5 132 132 132 138 138 136.5 136 128.5 127.5 127.5 127.5 127.5 127.5 126.5 126.5 125.5 125.5 syringae. (first entry) death; Location/Qualifiers
1..1464 4403765 349980 18234 305107 1230025 3300 3300 3300 3300 1230 7104 7107 349980 7240 cancer; AAQ57972 ABL19629 AAH62719 AAH62689 AAX91990 AAX17717 AAH67704 AAH68532 AAS89717 AAV01866 AAT67029 AAT670298 AAS51998 AAS54654 AAQ54668 AAS52178 AAS55178 AAS54978 AAS54978 AAS54978 ABL29756 AAX24980 ABL29839 AAF67769 AAF67767 ALIGNMENTS

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Alignment Scores:
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                                                                                                                                                                                                                                                                                                       The invention relates to an isolated nucleic acid molecule comprising a CC nucleotide sequence encoding proteins or polypeptides of Pseudomonas CC Conserved Effector Loci (CEL) and Exchangeable Effector Loci (EEL). CC genomic sequences: CEL and EEL DNA are useful for imparting disease CC resistance to a plant, by transforming a plant cell with the nucleic acid and regenerating a transgenic plant from the transformed plant cell, cc where the transgenic plant expresses a heterologous DNA molecule under CC conditions effective to impart disease resistance, or by treating a plant CC with an isolated protein or polypeptide, by applying the protein or polypeptide, by applying the protein or polypeptide, by applying the protein or CC polypeptide in an isolated form or by applying a non-pathogenic bacteria which secretes the protein or polypeptide, under conditions effective to impart disease resistance to the treated plant. CEL and EEL proteins CC are useful for causing eukaryotic cell death, by introducing a cytotoxic Pseudomonas protein into a eukaryotic cell under conditions effective to cause cell death. CEL and EEL proteins are also useful for treating a cancerous condition, by introducing a cytotoxic Pseudomonas protein into cancer cells, and thus treating the cancerous condition. The method CC cancer cells, and thus treating the cancerous condition. The method CC comprising a DNA molecule encoding the cytotoxic Pseudomonas protein, CC to the patient, where the targetted DNA delivery system CC comprising a DNA molecule encoding the cytotoxic Pseudomonas protein, CC is expressed in the cancer cells. The present sequence is a DNA CC encoding Pseudomonas syringae pv. syringae HopPsyA homolog protein.
                                                                                                                                   US-09-825-414-66 (1-487)
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11-AUG-2000; 2000US-224604P.
17-NOV-2000; 2000US-249548P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              New nucleic acid molecules encoding proteins or polypeptides of Pseudomonas Conserved Effector Loci and Exchangeable Effector Loci encoding encoding the sequences, for imparting disease resistance to plants
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                              AlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerThrThrSerCysArg
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The invention relates to an isolated nucleic acid molecule comprising a nucleotide sequence encoding proteins or polypeptides of Pseudomonas Conserved Effector Loci (CEL) and Exchangeable Effector Loci (EEL) genomic sequences. CEL and EEL DNA are useful for imparting disease resistance to a plant, by transforming a plant cell with the nucleic acid and regenerating a transgenic plant from the transformed plant cell, where the transgenic plant expresses a heterologous DNA molecule under conditions effective to impart disease resistance, or by treating a plant
                                                                                                                                                                          Claim 1;
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17-NOV-2000; 2000US-249548P.
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UNIV NEVADA & COMMUNITY COLLEGE SYSTEM.
UNIV NEBRASKA.
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                                                                                                                                                                                                                                                                                                                                           Alfano JR,
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with an isolated protein or polypeptide, by applying the protein or copolypeptide in an isolated form or by applying a non-pathogenic bacteria combit because the protein or polypeptide, under conditions effective to impart disease resistance to the treated plant. CEL and EEL proteins are useful for causing eukaryotic cell death, by introducing a cytotoxic cause cell death. CEL and EEL proteins are also useful for treating a cause cell death. CEL and EEL proteins are also useful for treating a concerous condition, by introducing a cytotoxic cencer cells of a patient under conditions effective to cause death of concerous condition, by introducing a cytotoxic Pseudomonas protein into concer cells, and thus treating the cancerous condition. The method concerc cells, and thus treating the cancerous condition. The method comprising a DNA molecule encoding the cytotoxic Pseudomonas protein, to the patient, where the targetted DNA delivery system delivers the comprising a DNA molecule encoding the cytotoxic Pseudomonas protein comprising a DNA molecule encoding the cytotoxic Pseudomonas protein concerced in the cancer cells and the cytotoxic Pseudomonas protein concerced in the cancer cells. The present sequence is
                                                                                                                         Pseudomonas syringae pv. tomato (Pto) DC3000 CEL ORF5
T; 0 other;
                                                                                                                                        DNA.
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US-09-825-414-66 (1-487) x AAD20408 (1-1461)	DB:	Query Match:	Best Local Similarity:	Percent Similarity:	Score:	Pred. No.:	
×	22	77	78	85	18	9	
AAD20408		77.67%	78.40%	.198	1869.50	9.59e-148	
(1-1461)	Gaps:	Indels:	Mismatches:	Conservative:	Matches:	Length:	
	Ц	<u></u>	71	<b>33</b>	381	1461	

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                                                                    HopPtoA protein of Pseudomonas syringae
                                                   protein;
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                                                   transduction domain;
                                                   HopPtoA protein;
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                                                                                                                                                                                                                                                                                                                                                                     Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    cell. The method is used for delivering a heterologous effector protein such as an effector protein produced by bacterial plant pathogen, animal pathogen or a rhizosphere bacteria, or a protein secreted and/or delivered into eukaryotic cells by a Type III secretion system or a hypersensitive response elicitor, an avirulence protein, a hypersensitive response and pathogenicity-dependent outer protein, a protein or a pathogenicity protein, into an eukaryotic cell. The method is useful for delivering effector proteins for use in pharmaceutical, insecticidal, fungicide, herbicide and other
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The present sequence encodes a HopPtoA protein of Pseudomonas syringae by. tomato DC300 CEL. This is an effector protein, which is used in the method of the invention. The specification describes a method for delivering effector proteins into a target cell. The method comprises
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Delivering effector proteins into target cell for use in protein therapy, involves introducing effector protein fused to protein transduction domain of human immunodeficiency virus TAT protein,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          of a human immunodeficiency virus (HIV) tat protein into the target
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                                                      ValIleGlySerProAspGluArgAspAlaAlaLeuAlaHisAsnGluGlnIleAspAla
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                                                                                                               AspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAlaHisArgPheSer :::::: |||||| |||||||||
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              CC onserved Effector Loci (CEL) and Exchangeable Effector Loci (EEL)
CC conserved Effector Loci (CEL) and Exchangeable Effector Loci (EEL)
CC genomic sequences. CEL and EEL DNA are useful for imparting disease
CC resistance to a plant, by transforming a plant cell with the nucleak acid
CC and regenerating a transgenic plant from the transformed plant cell,
CC where the transgenic plant expresses a heterologous DNA molecule under
CC conditions effective to impart disease resistance, or by treating a plant
CC with an isolated protein or polypeptide, by applying the protein or
CC which secretes the protein or polypeptide, under conditions effective to
CC impart disease resistance to the treated plant. CEL and EEL proteins
CC are useful for causing eukaryotic cell death, by introducing a cytotoxic
CC cause cell death, CEL and EEL proteins are also useful for treating a
CC cancer cells, of a patient under conditions effective to
CC cancer cells, and thus treating the cancerous condition. The method
CC cancer cells, and thus treating a targetted DNA delivery system
CC to the patient, where the targetted DNA delivery system
CC to the patient, where the targetted DNA delivery system
CC polypestide into cancer cells and the cytotoxic Pseudomonas protein,
CC to the patient, where the targetted DNA delivery system
CC preudomonas syringae pv. tomato (Pto) DC3000 CEL DNA.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Page 9-17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            New nucleic acid molecules encoding proteins or polypeptides or Pseudomonas Conserved Effector Loci and Exchangeable Effector
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Collmer A,
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ble Effector Loci; EEL; disease resistance; transgenic plant;
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                                                          ASNVALVALARGThrValLeuAlaProAlaLeuAlaSerArgProSerValGlnGlyAla 240
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                The invention relates to an isolated nucleic acid detection reagent capable of detecting 1000 or meenes from Drosophila. The invention useful in developmental biology and in elucidating cell signalling and cell-cell interactions in higher eukaryotes for the development of insecticides, therapeutics and pharmaceutical drugs. The invention discloses genomic DNA sequences (ABL18176-ABL30511), expressed DNA sequences (ABL18176-ABL30511), expressed DNA (ABBS7737-ABB72072).
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                        HisAspAlaMetAlaValSerValLysArgHisSerProAlaLeuGlyArgGlnValVal 208
                                                                                                                                                                 LysMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerProAspLysLeu 188
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                                                                                                                                                                                                                                                                                                         GlnProAlaIleAsnLysGly---
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                                                                   CATGATGGGCTCGCCACAACAACC---
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	alleSerSerThrGlyAlaSerLeuArgSerThr 453    :::    AGCTTCCGCAACAGCACCAAGTTCAACAACAACA 1469  dard; DNA; 4645 BP.  (first entry) rhamnosus outer membrane protein rompA gene. ur; aroma; texture; nutritional; dairy manufacture; process; anti-infection; rotavirus infection; heart	aSerSer    ::: AAGCACA pMetSer ::: CACAGCA	AGCAGCAACAACAGCAGGTCCTGACGCA AGCAGCAACAACAGCAGCATGTTATAAACAC TCATCACTCAGCGCCATGTTATAAACACG1yLeualaThrasp	339 103 352 109 370	gglyGlyAlaPheValLeuGlyMetLysAspLysGluProLysAla	

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Percent Similarity:
Best Local Similarity:
                                                                                                                                               Alignment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               a sequence present in Lactobacillus rhamnosus strain HN001 and encoding a polypeptide capable of modifying the flavour, aroma, texture, nutritional and health benefits of milk-derived products, and/or survivability of microbes in dairy manufacturing processes. The polynucleotides are useful for improving the properties of microbes used in the manufacture of milk-derived products such as chapses.
                                                                                                                                                                                                                                                                                 protein and carbohydrate utilization and conversion. microbial population can be administered to a mammal carcinogenic agent. The present sequence is Lactobac
                                                                                                                                                                                                                                                                                                                                                                   immune system modulation and treatment of autoimmune disorders and allergies; treatment of allergic responses to foods; reduction of blood lipids and prevention of heart disease; antihypertensive effect; prevention and treatment of urogenical infections, Helicobacter pylori, or hepatic encephalopathy; treatment of inflammatory bowel disorder and irritable bowel syndrome; modulation of endocarditis; and for improved irritable bowel syndrome; modulation of endocarditis; and for improved
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          derived products such as cheeses, yogurt, fermented milk products, sour milks and buttermilk; in modifying the flavour, aroma, texture and health-related benefits of milk-derived products and in increasing the survival of microbes during industrial fermentation processes. The bacteria may be
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CDS
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             diarrhoea; aid in lactose digestion; as anti-cancer and anti-mutagenesis; liver cancer reduction; reduction of small bowel bacterial overgrowth;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     used to increase resistance to enteric pathogens and anti-infection activity, including treatment of rotavirus infection and infantile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 2;
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                                                                                                            No.:
     Match:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   polynucleotides and polypeptides from Lactobacillus rhamnosus, ful in e.g. improving the flavor, aroma, texture and health-related efits of milk-derived products, or in increasing properties of robes -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VIALACTIA BIOSCIENCE
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/product= "Outer membrane protein"
/note= "CDS does not include start codon"
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                                           CAGGCTGCAAGCGAGGCAGCAAAGGCAAGCAGTAACGCGAGTGCCGCAACCAGCGCC---
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                                                                                                                                  ACCGCTGCGAGTGCGGCATCCAGCTATCCGAAGGATAGTGGGATTCAGTCACTAGCCAGT
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The invention relates to an isolated nucleic acid detection reagent capable of detecting 1000 or more genes from Drosophila. The invention
                                            Claim 1; SEQ ID NO 21607; 21pp + Sequence Listing; English.
                                                                                 New isolated nucleic acid genes from Drosophila and interactions -
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                                                                                                                                                                                                                                                                                                                                                                                              Drosophila melanogaster
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     GlyGlyTyrAlaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAspSer
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                                                                                                                           Novel nucleotide sequences encoding Moraxella catarrhalis outer membrane protein-106 polypeptide, useful for diagnosis of bacterial infections and as vaccine against Moraxella catarrhalis infection of
                                                                                                                                                                                                                                 P-PSDB;
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                                                 Claim 6; Column 45-54;
                                                                                                                                                                                                                                                                                                          Tucker K,
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Best Local Similarity:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         The invention relates to an isolated nucleic acid detection reagent capable of detecting 1000 or more genes from Drosophila. The invention useful in developmental blology and in elucidating cell signalling and cell-cell interactions in higher eukaryotes for the development of insecticides, therapeutics and pharmaceutical drugs. The invention discloses genomic DNA sequences (ABLIG176-ABL30511), expressed DNA sequences (ABLIG176-ABL30511), expressed DNA sequences (ABLIG175) and the encoded proteins
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  New isolated nucleic acid genes from Drosophila and interactions -
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11-JUL-2000;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATCGCCCCAGATTTCTCAAACTCCACCCATGCAGGCAAAGCTGCATCAGCATCAGGTGGT
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IleGlnAspLysValLysSerThrAlaSerSerThrThrSerTyrValAlaAspGlnThr 428
                                                                                                                                                    ACAAGTCATCACTCAGCGCCATGTTATAAACACATCCACGGCTCAAGGACAACAAATCAT
                                                                                                                                                                                                                                                                                                         SerAsnLeuValGlySerValGlyValPheAla-----GlyTrpThrThrAla
                                                                                                                                                                                                                                                                                                                                                              GCGACAATCGCCACTGCAACAGCAACCTACTACCCCCACCTTGCAACAGCAGCCAAACCA 5640
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                                                                                                                                                                                                                                                         ACAGCAGCAGCAACAACAGCAGGTCCTGACGCAGCAACAGCCACAGCCTGGACAACAGCA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LeuAlaGlyGlyTyrAlaGlyValSerLysLeuGlnLysMetAlaThr-------
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                                                                                                  -GlyLeuAlaThrAspProAlaValLysLysAlaGluSerPhe
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                                                                                                                                      family. The metaloprocure compositions for the treatment of compositions, animal feed and compositions for the treatment of textiles. It may also be used for peptide hydrolysis, waste treatment and for cleaving recombinant fusion proteins. Nucle acid sequences are useful as primers and probes for detecting acid sequences are useful as primers and probes for detecting acid sequences in other organisms, and for the chiral property is the boundary of the composition of the compositions of the compositions of the compositions for the treatment of the composition of the compositions for the treatment of the composition of the composition
                                                                                                                                                                                                                                                                                                                                                                          This DNA sequence encodes metalloprotease YOMI (see AAW98149) of Bacillus subtilis. The invention relates to the discovery of this previously unknown metalloprotease, uses of the metalloprotease in industrial and agricultural applications, and advantageous strain improvements based on genetically engineering a Gram-positive
                                                                                                                                                                                                                                                    midroorganism to delete, underexpress or overexpress the enzyme. Due to overall relatedness of the enzyme with Pseudomonas lash protein, YOMI appears to be a member of the M23 metalloprotease family. The metalloprotease can be used in claimed cleaning compositions, animal feed and compositions for the treatment of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  524
  Sequence 7100 BP;
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P-PSDB; AAW98149.
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                                                                      of heterologous proteins, especially enzymes, hormon
                                                                                                                              production of the enzyme.
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  2649 A; 1294 C;
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                                                                                                                           Gram-positive cells in which YOMI is
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ValGlnSer <i>!</i> :::::::: ATTAAAGCGT	GlyLeuVal :::    AATATCGTC	GLnGly ::: GAGCTA	SerAla GATCTG	Glnval ;;: TCAATA	AspLysLe	GlyThr GAGCTC	ProLeu ::: AAAATC	Alaala TATAAT	GluLys ::: ATAGAA	ATCTCC	SerGluGly	HisasnG     TTGAATA	AlaAla      CAGTA	SerThr    ::: AGTTCT	MetGlu :::    ATTGAA	414-66	lari imil
SerArg ::: GCGTTA	Ala GGG	Alaval AATGAT	LeuAsn         GCCAAT	ATCAATT	eg h	LysMet TCCACG	LeuLysProLeuThr ::: ATCACAGATATTCTT	AlaSerValLeu :::    AATGAACTTCTC	PheAsp     ATTGAT	GGTTCT	GLu GLu	GluGln      ATGCAA	Hisarg ::: AATAGT	ThrSer	SerPhe:	(1-48	ty: arity:
AspGln :::    GAACAG	ASD      AACTCC	AspPhe CTTATT	ValVal ::: TCTATC	GCAGAT	.sAspAla ::: TAACACT	MetAsp ::: TTAACG	LeuThr ::: ATTCTT	LeuGln	ArgLeu     ACTCTC	TTATTC	ThrPro	IleAspAla TTTAGAGAA	PheSer ::: CTTAAT	CysArg TCTAGT	erPheArgThrAla :::::: TATATCAGCGACAG	7) × A	0.13 140. 33.4 20.4 5.82
rArgAspGlnLeuArgGl : ::   ::: GTTAGAACAGATTGGTAT	Asn      AACTCCTTAAAGAC	GlnGlyAlaValAspPheGlyValSe::: GAGCTAAATGATCTTATTGGTTATAC	AlaLeuAsnValValArgThr'       :::    CTGGCCAATTCTATCCGTAAA	AATTGCAGATAAATTAAATGAG	MetAla: ::: CTAACG	Argala. ::: AAAACT	ProLeu ::: CAAATG	aAlaSerValLeuGlnTyrMetG :::         TAATGAACTTCTCC	AlaThr'     ATGACA	TACGGA	AlaThr      GCAGAA	AlaLeu      GAATTA	AlaAlaHisArgPheSerVal     ::: ::     CAGTAAATAGTCTTAATGTAAGC	AspLeu ::: AATAGA	AlaserAs ::: CAGGCACA	AAX24980	139 444 88
GlyGlyAl ATCTCAGT	ACAATT	SerThrAla- :::      ACAACTGCAA	ValLeu	AATGAG	ValSer ::: GCAGCA	ArgGly GCCCAA	IleSer ACAGGC	GlnPro     CAAGAA	Thrala AATATT	GCTATC	IleAla ::: CTAACC	GCCTCC	IleGly     ACTGGA	GlnAla        CAAGCT	Aspala CAAGTA	(1-7	GHXOXF
AlaPheva STTAAAAC	AlaGlyPheGlyAspAr         AATTTTCGCGCGGATTGGGAATAA	Ala     GCAATTG	AlaLeuAsnValValArgThrValLeuAlaProAla     :::           ::: CTGGCCAATTCTATCCGTAAAGCTGGTTCA	-ValAspMet         GTTGATAAI	PAlametAlaValSerValLysArgHisSerProAlaLe : :::	lyThrLysMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSer- 	ProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspG 	InProAlaIleAsnLysGlyAspTrpLeuAlaT    ::   :::          :::  AGAATCTATTGACTTAGGTGATACACTTTCAA	LuLysPheAspArgLeuAlaThrThrAlaSerSerAlaPheGluAsnThrProPheAla :::	AlaLysala ::::::   ATCTCCGGTTCTTTATTCTACGGAGCTATCTCTGGACTTAAAGAAATGGTATCCCAGGCA	ProAlaThrIleAlaGluThrPhe	HisAsnGluGlnIleAspAlaLeuValGluTh             TTGAATATGCAATTTAGAGAATTAGCCTCCAACGCTCAAAC	IleGlySerProAspGluArgAspAlaAlaL         aCTGGAAGCAATAATATCAGATCACAAATTC	SerThrThrSerCysArgAspLeuGlnAlaIleThrAspTyrLeuLys     :::          AGTTCTATGGGCTCTAGTAATAGACAAGCTGTTCAAGATTATTTGAAT	MetGluSerPheArgThrAlaSerAspAlaSerLeuAlaSerS: :::	100)	Length: Matches: Conservati Mismatches Indels: Gaps:
lLeuG } AGCTG	lyPheG       GGATTG	a	laLeuA: ::   CAACTG	spMetGlyIleAlaValGl       ATAATAACTATGCTGTTAC	rgHiss : ACTTTA	isTyrL ; AAAATG	euSerG GGAGAA	SnLysG: ::   ACTTAG	laPheG TTATGA	TTAAAG	he     CAAAA	ValGluThrArgAlaAsnArgL :::          ::: GCTCAAACAGCTGCTAATCAAG	spGluAr ::    ATATCAG	SPTYTL	lasers ;;; naaacc		tive:
lymetLys     -  GTGGTGAA	lyaspa   ::: GGAATA	CAACAC	LeuAlaSerArg	leAlav      ATGCTG	erProA ::   ATATTG	euSer- ::    TCTCTG	lyAlam TGGGTT	lyaspī       GTGATA	luAsnT ATGAGC	AAATGG	GCATGT	rgAlaA      CTGCTA	rgAspA    GATCAC	euLysH     GAAT-	SerSerVal ;;; CTAAATAC <i>i</i>		7100 128 81 222 194
დ %.	TC:	GTGAATC	Pros	alGlnThrP        TTACAACTC	laLeuG    CAGCAA	ThrSel:: :: GATTTAAC:	etAspG    :  CGATG	rpLeuA    : CACTTT	hrProp : CGGATT	AlaLys :::::: TATCCCAG	CCACCT	snArgL   ::: ATCAAG	palaalaLe ACAAATTCA	HisHisV	LArgs     \CGGT		
PLYSGlu     TAAATCA	etLeuSer      AAAGCTCA	Gly     CAGGG	> ⊢	hrPhe    CTCTA	uGlyArg AAATGAT	erPro ::[]] CTCCC	lnval :: AAAGT	laThr ;; CAAAT	heala :: ataaa	ysAla ::    AGGCA	ATTTA	GCCTCT	euAla ::: AAAGC	alPhe	erval ATGGC		
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RESULT ABL298E ID AE XX AC AC XX DT 26 XX DE DE	Qу	Оy	оу оъ	Qу	Фр	Оу	Qу	Qу	Qу	ДУ	Оу	Db Qy	ДУ	ОУ	Qy	Qу
LT 11 9839 ABL29839 standard; DNA; 3690 BP. ABL29839; 26-MAR-2002 (first entry) Drosophila melanogaster genomic polynucleotide SEQ ID NO 40990.	454 ValAsnAsnLeuArg 458 :::     ::: 2683 ATTGAGAATACTAAA 2697	436 LysAspMetSerGlyGluAlaIleSerSerThrGlyAlaSerLeuArgSerThr 453	423 TyrValAlaAspGlnThrValLysLeuAlaLysThrVal 435 :::     :::     :::    2563 GAAGAGCAAGAATACCTTCAAGTCACTCAGCAATTAGCACAAACTTTCCCTGCATTAGTT 2622	408 PheIleGlnAspLysValLysSerThrAlaSerSerThrThrSer 422	406Gluser 407 2443 GAGCAGAGCCAAACCAATGTCGAAGCAATTACGACCAATAAAGACTCCACTGATAAA 2502	391 TrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAla 405	378	362 AlaThrLysAsnIleThrAspSerAlaThrLysAlaAlaValSerGln 377	346 LeuAlaLeuAlaGlyGlyTyrAlaGlyValSerLysLeuGlnLysMet 361	333ArgSerLeuValSerAlaThrSerLeuThrLysAsnGly 345    :::::	316ArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLysAlaVal 332 :::	315 315 2026 AACTTCACTGAATTTGCTATTGCAGCTTCTGATGCTTTTATTAGCGACGGATTAATTGAA 2085	315	AlaalaLeuAsnAlaGlyLysAlaAlaLeuAsnAlaGlyLysAlaAlaLeuAsnAlaGlyLys	300 AlaileLysSerAlaSerTyrSerGly	284 ProLysalaAlaLeuSerGluGluThrAspTrpLeuAspAlaTyrLys 299 :::

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                                                                                                                                                                                                                                                                                                                                                                                                                            Score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       The invention relates to an isolated nucleic acid detection reagent capable of detecting 1000 or more genes from Drosophila. The invention useful in developmental biology and in elucidating cell signalling and cell-cell interactions in higher eukaryotes for the development of insecticides, therapeutics and pharmaceutical drugs. The invention discloses genomic DNA sequences (ABL16176-ABL30511), expressed DNA sequences (ABL01840-ABL16175) and the encoded proteins (ABB57737-ABB72072).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 3690 BP; 796 A; 1149 C; 949 G; 796 T;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from WIPO at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 1; SEQ ID NO 40990; 21pp + Sequence Listing; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   New isolated nucleic acid detection reagent for detecting 1000 or more genes from Drosophila and for elucidating cell signalling and cell-cel interactions
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11-JUL-2000; 2000US-0614150.
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pharmaceutical; gene;
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                                             TCTCCTGGTTACAGCTATGGACAGATCTCGCCGGGCATCTCCAGGATAGCCACCTACTCG
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1815	)TGTGGTCTCAAAAGTGGCTACCTACGCAGCTCCCTCCATAGCCAC	1756	B	
4	euAlaThrAspProAlaValLysLysAlaGluSerPheIl		Qy	
1755	ATCGCTAAGGTAGCGACATACGCTTCTCCGGCAATATCAACG	1714	Db	
395	SerGlnLeuSerAsnLeuValGlySerValGlyValPheAlaGlyTrpThrThrAlaGly	376	Qy	
1713	GTCTCCCATCAGTATGTCTCCAAGCCAGCAGCAGCCATCTCAGCAGCCCCCCGCA	1660	Db	
375	SerLysLeuGlnLysMetAlaThrLysAsnIleThrAspSerAlaThrLysAlaAlaVal	356	Qy	
μ.	TCAGCAGCTCCGGCAGTGACCAAGATCGCGACAAGCTATGGAGGATCGGGTCATGGAGCC	1600	Db	
. 355	ValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyrAlaGlyVal	3 <u>3</u> 6	Qy	
: 1599	GTCTCTAAGCCAGCGGTTGCTAAAGTGGCAACCTATGCTGCTCCTGCCATTTCAACATAC	1540	Db	
335	AspValAlaThrAspGlyLeuLysAlaValArgSerLeu	323	Qy	
1539	GCCACTGGATATGGAGGAAGTGGCTCGGGATACAGTTCGGGCGCTGTTTCCCCATCAATAT	1480	Db	
322		322	Qy	
1479		1429	Db	
322	erGlyAlaAlaLeuAsnAlaGlyLysAr	307	Qy	
14	ATTTCAGCCGCTCCAGCCATCGCCAGGTGGCTACCTAT	-8-	Db -	
306	luGluThrAspTrpLeuAspAlaTyrLysAlaIle•LysSerAlaSerTy	288	Qγ	
1389	:::    GTCCAAGCCTGC6	1339	Db	
1 287	AspGlnLeuArgGlyGlyAlaPheValLeuGlyMetLysAspLysGluProLysAlaAla	268	Qy	
1338	GTCTCCACCTACTCCTCGGGATATGGTTATGGTTCG	1303	Db	
, 267	AlaGlyGlyLeuValAlaAsnAlaGlyPheGlyAspArgMetLeuSerValGlnSerArg	248	Qy	
1302	ATTTCAAGCTACTCCACTGGTCCTGCCATTTCGAAGGTAGCATCCTACGCAGCTCCCACT	1243	DЬ	
247	aSerArgProSerValGlnGlyAlaValAspPheGlyVals	231	Qy	
1242	CCAGCTGTGGCTATTGCCGCTCCAGCAGTGGCCAAGGTGGCAACGTATGCAGCTCCTGCC	1183	Db	
230	GlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThrValLeuAlaProAla	211	Qy	
3.1182	AGCTATGGAGCTTCAGGATCGGGAGCCGTCTCCCACCAATATGTCTCGAAG	1132	Db	
210	${\tt AlametAlaValSerValLysArgHisSerProAlaLeuGlyArgGinValValAspMet}$	191	Qy	
: 1131	TACGCTGCTCCCACGGTTGCAACTTACTCATCTGGGCCTGCCATCTCGAAGCTCTCCACC	1072	Дb	
190	ArgAlaArgGlyAspLeuHisTyrLeuSerThrSerProAspLysLeuHisAsp	173	Qy	
1071	GCATCCGGAGCGCTGTCCCCACCAGTATGTCTCCCAACCAGCCATTGCCAAGGTGTCCACT	1012	ДD	
172	LeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAsp	159	Ωу	
1011	AGTGGCGGCCAGCTACGG!	952	Db	
158	ThrProLeuLysProLeuThrProLeuIleSerGlyAla	146	Qy	
951	TATGCTCCCTCAATTACCAAGTACAGCCAGGTATCAGATGTATCCCACCAGTACATATCC	892	Db	
145	SerValLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuAla	129	Qy	
891	GTGAAACTGGCCACCTCCGTCACTGCTCTCCTCCCACGGAACAGGATACTCCGCCAGC	832	рь	
128	oPheAlaAla	111	Qy	
831	CCATCGGTTTCGTATTCAGCGCCAACGATTGCCAAGGTGTCCACCTACTCAGCGCCTTCA	772	Db	

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AAF68082 and AAF68082 represent sequencing primers which are used in an
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PheSerAlaLeuAsnValValArgThrValLeuAlaProAlaLeuAlaSerArgProSer :::
                                                GCACCAGTTCTTCCAGGTGAAGAAATTGAGTTCAGCGTTGAGCGCTCCGCAGTGGACAAC
                                                                                   SerProAlaLeuGlyArgGlnValValAspMetGlyIle---
                                                                                                                                                                                     GTGATCGTGCACGGCATGTGGACCTCTGCCATCGGTGAACTGATCGCCGGTGCAGCATTC 3637
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                                                                                                                   AACGATGAGCAGATCCAAACTCCCGCAGCCAAGGTCGTGGAATACACCGCAACCATGCTG 3697
                                                                                                                                                    ProAspLysLeuHisAspAlaMetAlaValSerValLysArgHis---------
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elanogaster ge evelopmental	irst entry		dard; DNA; 61	::	oPheGlnLeuArç	CGTGCCGATGTTGAGAACCGTGCACCAGGTC	pIleGluGlu	CAGGCTGGTCTT	rGlyAlaSerLeu	rccree		GTTTTCGATTACGTTGCG	erThrThrSerTyrVal	CCAACTACGC	eGln	ATCGTTTAC		GGTGAGTACAAC	lserGlnLeuSeı	CGCTGAAATGCGT	lSerLysLeuGlr	TTGTACCTCAC	uValSerAlaThı	GAAAACAACCC!	tAlaGlyLeuPro	ACACACCGGCAAI	aTyrLysAlaIle	GGTATGGAAGC	uGlyMetLysAsp	: CGCATTCCCAGGO	eGlyAspArgMet	CAACTTA	yAlaValAspPhe	CGCCCAGGAATGGGAGAGGTCCGCACCGTTACCGCA
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cleotide SEQ l signalling						  CGTGCCTTCATT	SerAlaPhe		AsnAsnLeuAr	AACTTGGCTGG		1	ValLysLeuAl	8	AspLy	ATGCACCGCTT	ThrAspProAl	TATECTEGTET	ServalGlyva	TTGAACCAGCG	LysAsnIleTh	GTGGGCATGGC	AsnGlyLeuAl	GTGGCAGGGGA	ThrAspGlyLe	CT(	TyrSerGlyAla	CAGGCAGCTCG	AlaAlaLeuSe	TCCCAGGGC	SerArgAspGl	GCCACCGCTGT	AlaGlyGlyLe	GCA
) ID NO 40987. ;; insecticide						TTGATCCCTGGC	···-SerArgS	GGAACCCAGGCTGTCTTGCGCCCTT	,HisArgSerAlaF		Ala	TCTGTTTCCGAA	LysThrValLys <i>i</i>	RITGGGTCTGACCGCA	WalLysSerThr/		ValLysLysAlac	CACTCCGTTGGTGAGTACAACGCGCTTGCTGCATATGCTGGTGTGCTGTCCCTGGAATCC	.PheAlaGlyTrp7		:AspSerAlaThrI	GACGGCGTTTTGTACCTCACCCAGTTCACCCAGGTGGGCATGGCAACTCTGGGCGTT	LeuAlaGlyGly7	GAAATCGTGGAAAACAACCCACGCGAAGTAACCGTGGCAGGGGAGAAGTTCTTCCACCC	LysAlaValArg	-CTGGGCTTCTCCATCGTG	LeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaG	ATGGGTATGGAAGCACGCCGTAACTCTCAGGCAGCTCGCGCTATCTGGGACC	GluGluThrAspT	ACTTTCTACGCATTCCCAGGCCAGGGCATTCAGTCCCAGGGC	ıLeuArgGlyGly#	GTCAACGCCAACTTAGTGCTTACCGCCACCGCTGTTGTGGCAGCTCCATCT	WalAla	
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The invention relates to an isolated nucleic acid detection reagent capable of detecting 1000 or more genes from Drosophila. The invention useful in developmental biology and in elucidating cell signalling and cell-cell interactions in higher eukaryotes for the development of insecticides, therapeutics and pharmaceutical drugs. The invention discloses genomic DNA sequences (ABLIG176-ABL30511), expressed DNA sequences (ABLIG175) and the encoded proteins
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New isolated nucleic acid genes from Drosophila and
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                                                                                                                                                                                                                                                                        CCCGGAATCACTAAAGTGGCGACATACACCTCGCCCGGATATAGTTACAGTTCGGCAAGT
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CCATCGGTTTCGTATTCAGCGCCAACGATTGCCAAGGTGTCCACCTACTCAGCGCCTTCA 3990
                                                                                                                                                               GCGCCACCAGTGACTTCCAAGGTGGAGACATACAGC-----
                                                                                                                                                                                                                    CCGGGAATATCCAAAGTGGCGACTTACTCCTCCCCATCGCTTTCCAGCGTTCCCTACTAT
                                                   TCTCCTGGTTACAGCTATGGACAGATCTCGCCGGGCATCTCCAGGATAGCCACCTACTCG
                                                                              AsnArgLeuTyrSerGluGlyGluThrProAlaThrIle-----
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                US-09-825-414-66 (1-487) x AAH67704
                                                                                                                                                                                    analysing the expression profile or expression pattern of a gene derived from Coryneform bacterium, and identifying a homologue of a gene derived from coryneform bacterium. Coryneform bacteria are useful for producing amino acids, nucleic acids, vitamins, saccharides and organic acids, particularly L-lysine. The present sequence is a nucleic acid described in the exemplification of the invention.

Note: The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from the European Patent Office.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Nakagawa
Tateishi
                                                                                                                                                                                                                                                                                                                 The present invention provides a number of nucleotide and protein sequences from the Coryneform bacterium Corynebacterium glutamicum are useful for identifying the mutation point of a gene derived from mutant of coryneform bacterium, measuring expression amount and
                                                                                                                                                                                                                                                                                                                                                                                                                             Novel polynucleotides derived from Coryneform bacteria, for identifying mutation point of a gene, measuring expression of a gene, analysing expression profile or pattern of a gene and identifying homologous gene
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---SerLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyr 352
                             GAAATCGTGGAAAACAACCCACGCGAAGTAACCGTGGCAGGGGAAAGTTCTTCCACCCA
                                                     LysArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLysAlaValArg---
                                                                                    GCCGATGCACACCCCGCAATAAG-----
                                                                                                               LeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGly
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                                                                                                                                                                      PheValLeuGlyMetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAspTrp
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                                                                                                                                                                                                                            {\tt AlaGlyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGlyAla}
                                                                                                                                                                                                                                                                                                                                           PheSerAlaLeuAsnValValArgThrValLeuAlaProAlaLeuAlaSerArgProSer 236
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                                                                                                                                           ---ATGGGTATGGAAGCACGCCGTAACTCTCAGGCAGCTCGCGCTATCTGGGACCGC
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Qy 353 AlaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAspSerAlaThrLys
353 AlaGlyValSerLysLeuGlnLysM
353 AlaGlyValSerLysLeuGlnLysl     ::::::::::::::::::::::::::::::::::
353 AlaGlyvalSerLysLeuGlnLysl     ::::::::::::::::::::::::::::::::::
353 AlaGlyValSerLysLeuGlnLysl
353 AlaGlyValSerLysLeuGlnLysl     ::::::::::::::::::: 

Search completed: January 31, 2003, 05:30:03 Job time: 293.246 secs

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Title:
Perfect score:
Sequence:
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-WODEL=frame+_p2n.model -DEV-xlp
-Q-/cgn2_1/USPT0_spco1/US09825414/runat_28012003_161742_26093/app_query.fasta_1.1294
-Q-/cgn2_1/USPT0_spco1/US09825414/runat_28012003_161742_26093/app_query.fasta_1.1294
-DB=EST -OFMT-fastap -SUFFIX=p2n.rst -MINMATCH=0.1 -LOOPCL=0 -LOOPEXT=0
-UNITS=bits -START=1 -END=-1 -MATRIX=blosum62 -TRANS=human40.cdi -LIST=45
-DCCALICN=200 -THR_SCORE=pct -THR_MAX=100 -THR_MIN=0 -ALIGN=15 -MODE=LOCAL
-DUTFMT=bto -NORM-ext -HEAPSIZE=500 -MINLEN=0 -MAXIEN=20000000000
-USER=US09825414_eCGN_1_1_2221_erunat_28012003_161742_26093 -NCPU=6 -ICPU=3
-NO_XLPXY -NO_MMAP -LARGEQUERY -NEG_SCORES=0 -WAIT -LONGLOG -DEV_TIMEOUT=120
-MARN_TIMEOUT=30 -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPEXT=7
-YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7
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Maximum Match 100%
Listing first 45 summaries
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Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
   16154066 seqs, 8097743376 residues
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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

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## ALIGNMENTS

REFERENCE AUTHORS		ORGANISM	SOURCE	KEYWORDS	VERSION	ACCESSION		DEFINITION	LOCUS	AQ012154/c	RESULT 1
$1 \pmod{2191}$ (bases 1 to 2191) Choudhary,M., Mackenzie,C., Mouncey,N., Weinstock,G.M. and Kaplan ,S.	Bacteria; Proteobacteria; Alphaproteobacteria; Rhodobacterales; Rhodobacteraceae; Rhodobacter.	Rhodobacter sphaeroides	Rhodobacter sphaeroides.	GSS.	AQ012154.1 GI:3177109	AQ012154	sphaeroides genomic clone 8758P1D037011098, DNA sequence.	8758P1D037011098 Cosmid library of chromosome II Rhodobacter	AQ012154 2191 bp DNA linear GSS 04-JUN-1998		

Qy 2 Db 13	Qy 2 Db 14	Ωy :	Ο Y	Qy 1 Db 15	Qу 1 Db 15	Qy 1 Db 16	Oy 1 Db 16	Qy 1 Db 17		us-09-8	Alignment Pred. No. Score: Percent S: Best Loca: Query Mate DB:	FEATURES SOU	COMMENT
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<pre>ispGlnLeuArgGlyGlyAlaPheValLeuGlyMet ::   ::         </pre>	AlaGlyGlyLeuValAlaAsnAlaGlyPheGlyAspArgMetLeuSerValGlnSerArg	AlaLeuAlaSerArgProSerValGlnGlyAlaValAspPheGlyValSerThr     :::         GCACCGTCGTCGAGGCCGTGAACCGCCTCGTCTGGCGCCCTCACG	<pre>stGlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThrValLeuAlaPro</pre>	erValLysArgHisSerProAlaLeuGlyArgGlnValValAsp	ArgGlyAspLeuHisTyrLeuSerThrSerProAspLysLeuHisAspAlaMetAlaVal             TGCGGGAGGCTGGCGTCTGGCCCGGCACGACGAGATCCGCTTAGTCACCAGCGTGCCCCT	IleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAspArgAla     :::        :::   TGCATCGGCGTGATCTCCTGCGCGATGGAGCAGACCCTGCCCGAGCTTTCGCGCCCGGGTT	GlnProAlaIleAsnLysGlyAspTrpLeuAlaThrProLeuLysProLeuThrProLeu :::	ThrAlaSerSerAlaPheGluAsnThrProPheAlaAlaAlaSerValLeuGlnTyrMet 	rProAlaThrIleAlaGluThrPheAl	14-66 (1-487) x AQ012154 (1-2191)	cores:       0.000649       Length:       2191         136.00       Matches:       113         ilarity:       37.58%       Conservative:       55         Similarity:       25.28%       Mismatches:       163         indels:       117       17         Gaps:       21	shotgun. Location, 1. 2191 2. 2191 /organism /strain= /db_xref= /clone="f" /clone="f" /clone=11 /lab_host /note="my" /note="my" /note="my" /note="f" /149 1 a 749	Contact: Choudhary, M.  Department of Microbiology and Molecular Genetics University of Texas Medical School 6431 fannin Street, Houston, TX 77030, USA Tel: 713 500 5437 Fax: 713 500 5499 Email: madhu@utmmg.med.uth.tmc.edu Seq primer: pBluescript T7
279 1290	267 1350	247 1404	229 1449	209 1482	194 1518	174 1578	154 1638	134 1695	114 1734				

Hordeum vulgare.  Hordeum vulgare  Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;  Epermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; Pooldeae;  Triticeae; Hordeum.  1 (bases 1 to 883)  1 (bases 1 to 883)  1 (chases 1 to 887.), Kleinhofs,A., Wise,R., Begum,D., Frisch,D., Yu  Wing,R., Close,T.J., Kleinhofs,A., Wise,R., Begum,D., Frisch,D., Yu  ,Y., Henry,D., Palmer,M., Rambo,T., Simmons,J., Choi,D.W., Fenton ,R.D., Close,S.J., Oates,R. and Main,D.  Development of a genetically and physically anchored EST resource for barley genomics: Morex 20 DAP spike cDNA library			
<pre>vulgare. vulgare a; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; phyta; Magnoliophyta; Liliopsida; Poales; Poaceae; Pooldea peae; Hordeum. s 1 to 883) Close,T.J., Kleinhofs,A., Wise,R., Begum,D., Frisch,D., Y Close,T.J., Kleinhofs,A., Simmons,J., Choi,D.W., Fenton</pre>	, א.ט. Devel	TITLE	
vulgare. vulgare .a; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta; phyta; Magnoliophyta; Liliopsida; Poales; Poaceae; Pooldea	Y.Y.	FERENCE AUTHORS	RE
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).2 GI:16326017		ACCESSION VERSION KEYWORDS	VE AC
369810 883 bp mRNA linear EST 22-OCT-2001 SME10026C02f Hordeum vulgare 20 DAP spike EST library HVcDNA0010 D DAP) Hordeum vulgare cDNA clone HVSME10026C02f, mRNA sequence.	2 0	SULT 2 369810/c CUS FINITION	RES BG3 LOC DEF
rArgSerGluThr 480 : ::      3AACACGGAAACG 611	heSerAı ::: CAGCGA!	627	g A
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Contact: Wing

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  AspGlyLeuLysAlaValArgSerLeuValSerAlaThr---
                                         GTCTCGGTCTCGGCCGGAGCAGCCTCT---TGCTCTGGTTCATTGGTCTCGGTCTCGGCC
                                                                                                                                                        SerGluGluThrAsp-----TrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyr
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Clemson Hall, Clemson,
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Total hg bases = 245
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           preparations, DNA sequencing and sequence analysis were performed at CUGI (Wing, Yu, Frisch, Henry, Simmons, Oates, Ranbo, Main). The sequence has been trimmed to remove vector sequence and contains a minimum of 100 bases of phred value 20 or above. For more details on library preparation and sequence analysis see http://www.genome.clemson.edu/projects/barley. To order this clone see http://www.genome.clemson.edu/orders Also see Close TJ, Wing R, Kleinhofs A, Wise R (2001) Genetically and physically anchored EST resources for barley genomics. Barley Genetics Newsletter 31:29-30. (http://wheat.ww.usda.gov/ggpages/bgn/31/cover.html)" 05 a 264 c 301 g 113 t
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note-"Vector: lambdaZAP; Site_1: EcoR1; Site_2: Xho1; Plants were grown in the greenhouse at the University of California, Riverside (Fenton, SJ Close, TJ Close). Whole spikes with awns trimmed were collected at 20 DAP (Penton). Total RNA was prepared, poly(A) RNA was purified, one primary unamplified cDNA library was made, and 1 million
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /clone_lib="Hordeum vulgare HVcDNA0010 (20 DAP)"
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                                                                                                                                                                                                              Carninci,P., Shibata,Y., Hayatsu,N., Sugahara,Y., Shibata,K., Itoh,M., Konno,H., Okazaki,Y., Muramatsu,M. and Hayashizaki,Y. Normalization and subtraction of cap-trapper-selected cDNAs to prepare full-length cDNA libraries for rapid discovery of new Genome Res. 10 (10), 1617-1630 (2000)
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Kuehl, P., Lewis, S., Matsuo, Y., Nikaido, I., Pesole, G.,
Quackenbush, J., Schriml, L.M., Staubli, F., Suzuki, R., Tomita, M.,
Wagner, L., Washio, T., Sakai, K., Okido, T., Furuno, M., Aono, H.,
Baldarelli, R., Barsh, G., Blake, J., Boffelli, D., Bojunga, N.,
Carninci, P., de Bonaldo, M.F., Brownstein, M.J., Bult, C.,
Fletcher, C., Fujita, M., Gariboldi, M., Gustincich, S., Hill, D.,
Fletcher, C., Fujita, M., Gariboldi, M., Gustincich, S., Hill, D.,
Fletcher, C., Fujita, M., Gariboldi, M., Gustincich, S., Hill, D.,
Fletcher, C., Fujita, M., Kamiya, M., Lee, N.H., Lyons, P.,
Marchionni, L., Mashima, J., Mazzarelli, J., Mombaerts, P.,
Narodone, P.,
Ring, B., Ringwald, M., Rodriguez, I., Sakamoto, N., Sasaki, H.,
Sato, K., Schonbach, C., Seya, T., Shibata, Y., Storch, K.F., Suzuki, H.,
Toyo-Oka, K., Wang, K.H., Weitz, C., Whittaker, C., Wilning, L.,
Wenchay, P., Weitz, C., Whittaker, C., Willing, L.,
Wenchay, P., Weitz, C., Whittaker, C., Willing, L.,
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Wenchay, P., Weitz, C., Weitz, C., Weitz, C., Weitz, C., Willing, L.,
Wenchay, P., Weitz, C.,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Direct Submission
Submitted (10-JUL-2000) Yoshihide Hayashizaki, The Institute of Physical and Chemical Research (RIKEN), Laboratory for Genome Exploration Research Group, RIKEN Gemomic Sciences Center (GSC), RIKEN Yokohama Institute; 1-7-22 Suehiro-cho, Tsurumi-ku, Yokohama, RIKEN Yokohama (E-mail:genome-res@gsc.riken.go.jp, URL:http://genome.gsc.riken.go.jp/, Tel:81-45-503-9222, Fax:81-45-503-9216)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sogabe,Y., Suzuki,H., Tagami,M., Tagawa,A., Takahashi,F., Tanaka,T., Tejima,Y., Toya,T., Yamamura,T., Yamanaka,I., Yasunishi,A., Yoshida,K., Yoshino,M., Muramatsu,M. and
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                                                                                                                                                                                                                                                    Functional annotation of a full-length mouse cDNA collection Nature 409 (6821), 685-690 (2001)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Please visit our web site (http://genome.gsc.riken.go.jp/) for
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                                                                                                                                       Location/Qualifiers
/organism="Mus musculus"
/strain="C57BL/6J"
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ProAlaThrIleAlaGluThrPheAlaLysAlaGluLysPhe--
                                                                      GAGAAGGAGGAGGCACTTAGCCAAGAGCAGCAGCGGAGCTCCCAGGAGAAGGGCGAGCTA 1907
                                                                                                                                     GluGlnIleAspAlaLeuValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThr 95
                                                                                                                                                                                                                   CTGAGTGGAGTCGTTCGGCAGCGTGAGGCAGAGCTGCTGGCCGCTCAGAGCCTGGTTGCGG 1847
                                                                                                                                                                                                                                                                                                                                                                AspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAlaHisArgPheSer 60
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IQIPRLPEGPPNFLRASALAEHIKPVVVIPEEAPEEEEPENLIEISSAPPAGEPYVVA
DLFDQTFGPPNGSMKDDRDLQIENLKREVETLRAELEKIKMEAQRYISQLKGQVNGLE
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PVKEKHARRIILGTHHEKGAFTFWSYAIGLPLSSSSILSWKFCHVLHKVLRDGHPNVL
HDYQRYRSNIREIGDLWGHLRDQYGHLVNIYTKLLLTKISFHLKHPQFPAGLEVTDEV
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1120 c 1260 g 695 t 1 other
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/db_xref="GI:12852463"
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/clone_lib="RIKEN full-length enriched mouse cDNA library"
/dev_stage="0 day neonate"
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/db_xref="MGD:MGI:1897732"
/db_xref="taxon:10090"
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422 2860	SerThrAlaSerSerThrThrSe     :::       GTCTGCTCCCATGAGATTGCGGCCAGCACGGCCCA	B 8
411 2800	lyLeuAlaThrAspProAlaValLysLysAlaGluSerPheIleGlnAs 	Оу
391 2755	lnLeuSerAsnLeuValGlySerValGlyValPheAlaGlyTr      	р <sub>р</sub>
371 2740	tAlaThrLysAsnIleThraspSerAlaTh	р 8
356 2680	.euThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyrAlaGlyValSe 	рь
336 2629	317 tAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLysAlaValArgSerLeuVal	g 8
317 2581	SerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMe 	dg VQ
303 2521	:PLeuAspAlaTyrLysAlaIleLysSe         GACGCTGTGCGGAGGATCGAGGA	DB Qy
283 2470	spLysG1        ACAAGGA	рь
263 2425	<pre>snAlaGlyPheGlyAspArgMetLeuSe</pre>	р 9
243 2401	225 rValleuAlaProAlaLeuAlaSerArgProSerValGlnGlyAlaValAspPh	pp Qy
225 2341		Оy
218 2281	etGlyIleAlaValGlnThrPheSer	D Qy
208 2224	pAlaMetAlaValSerValLysArgHisSerProAlaLeuGlyArgGlnValVa    ::: 	Db Qy
188 2168	uSerThrSerProAspLysLe  :::::         GGCTTCCTCTGAAGATGCT	ру
168 2120	lnValGlyTh     GCGTGAGC	B &
148 2062	aThrProLeu            ACCTCCGCTG	Оy
129 2003	110 AspArgLeuAlaThrThrAlaSerSerAlaPheGluAsnThrProPheAlaAlaAlaSer:::::	Ф
1967	CTCAGGAGCAGGGGCTTCGGCAGAAGCTGCTGGAT	Ъ

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RESULT 4
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                                                                                                               LeuAsnAlaGlyLysArgMetAlaGly-----------LeuProLeu 322
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-----GTCTCGGGCCTCAAGCCGGTG-----CTTGCCTCAACNGCTNCCACC
                                                                           Michalek,W., Weschke,W., Pleissner,K.-P. and Graner,A. EST sequencing and analysis in barley Unpublished (2000)
Contact: Michalek W
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Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Lillopsida; Poales; Poaceae; Pooldeae
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Hordeum vulgare cDNA clone HY09N21V 5', mRNA sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Institute for Plant Genetics and Crop Plant Research Corrensstr.3, D-06466 Gatersleben, Germany Email: mtchalekelpk-gatersleben.de, http://pgrc.ipk-gatersleben.de Seq primer: T3 primer for 5'end.
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                                                                                                                                                                                                                                                                                                                                                                            152
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XhoI; mRNA was made from developing caryopsis (3.-15.DAP)
of spring barley variety 'Barke', a high quality malting
variety. Cloning sites: EcoRI (5'-end of cDNA) and XhoI
(3'-end of cDNA). NOTE: Due to a cloning artefact caused
by the kit, in most cases the EcoRI site is NOT present,
as well as the EcoRI adapter. Average insert size is I kb
Sequence trimming: Vector sequences and sequence ends were
trimmed from the 5'-and 3'-end until a 50 bp window
contains less than two ambiguities. The maximum length was
set to 700 bp"
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/clone="HY09N21V"
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(3.-15.DAP)"
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/lab_host="XLOLR"
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/cultivar="Barke"
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RESULT 5
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                                                                                                                                                                                 Submitted (08-SEP-2000) Genoscope - Centre National de Sequencage, 2 rue Gaston Cremieux, CP 5706, 91057 EVRY cedex, FRANCE. (E-mail: seqrefdyenoscope.cns.fr - Web: www.genoscope.cns.fr)
This GSS is part of a random genomic sequencing program of thirteen yeast species: Saccharomyces bayanus var. uvarum, Saccharomyces
                                                                                                                                                                                                                                                                                                                                                                                                                                                               2 (bases 1 to 1094)
Blandin,G., Llorente,B., Malpertuy,A., Wincker,P.,
and Dujon,B.
  lactis var. lactis, Kluyveromyces marxianus var. marxianus, Pichia angusta, Debaryomyces hansenii var. hanseni, Pichia sorbitophila, Candida tropicalis and Yarrowia lipolytica. Genomic inserts of 3 to 5 kb were prepared and both extremities were sequenced. See keywords for description of this sequence and for the sequence of the other extremity of this insert.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Wincker,P. and Weissenbach,J. Genomic exploration of the hemiascomycetous yeasts: 1. yeast species for molecular evolution studies FEBS Lett. 487 (1), 3-12 (2000)
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                                                                                                                                              exiguus, Saccharomyces servazzii, Zygosaccharomyces rouxii, Saccharomyces kluyveri, Kluyveromyces thermotolerans, Kluyv
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                                                                            Contact: Delrot S.
TRANSPORT DES ASSIMILATS
UMR CNRS 6161, Universite de Poitiers
Batiment Botanique, 40 Avenue du Recte
Cedex, France
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Abbal.P., Agasse,A., Ageorges,A., Atanassova,R., Barrieu,F.
Abbal.P., Dedaldechamp,F., Delrot,S., Glissant,D., Grimpl
Hamdi,S., Romieu,C. and Terrier,N.
Generation of Expressed Sequence Tag from Grape Berry (skir
or seeds) at Various Developmental Stages
Unpublished (2002)
                                                  Tel: 00-33-(0)5-49-45-41-85
Fax: 00-33-(0)5-49-45-41-86
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                    il: Serge.Delrot@univ-poitiers
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Hordeum vulgare
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; Pooldea;
; Trittceae; Hordeum.
1 (bases 1 to 680)
Michalek,W., Weschke,W., Pleissner,K.-P. and Graner,A.
EST sequencing and analysis in barley
Unpublished (2000)
Contact: Michalek W
                                                                                                                                                                                              AL508002 680 bp mRNA linear EST 04-JAN-2001 AL508002 Hordeum vulgare Barke developing caryopsis (3.-15.DAP) Hordeum vulgare cDNA clone HY07H18V 5', mRNA sequence.
                                                                                                                                                                     AL508002.1
                                                                                                                                        Hordeum vulgare.
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a 251
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /cultivar="Ugni blanc"
/db_xref="taxon:29760"
/clone="PT005F08"
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/organism="Vitis vinifera"
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111.50
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                                                                                          ValLysAspMetSerGlyGluAlaIleSerSerThrGlyAlaSerLeuArgSerThrVal 454
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                                                             GGCGCAGCAACT --
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Institute for Plant Genetics and Crop Plant Research
Corrensstr.3, D-06466 Gatersleben, Germany
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note-"Vector: plasmid pBK-CMV; Site_1: ECORI; Site_2: XhOI; mRNA was made from developing caryopsis (3.-15.DAP) of spring barley variety 'Barke', a high quality malting variety. Cloning sites: ECORI (5'-end of cDNA) and XhOI (3'-end of cDNA). NOTE: Due to a cloning artefact caused by the kit, in most cases the ECORI site is NOT present, as well as the ECORI adapter. Average insert size is 1 kb sequence trimming: Vector sequences and sequence ends were trimmed from the 5'-and 3'-end until a 50 bp window
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(3.-15.DAP)"
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/clone="HY07H18V"
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/cultivar="Barke"
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/lab_host="XLOLR"
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202 c 244 g 83 t 4 others
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                      ThralaSerSerThrThrSerTyrValAlaAspGlnThrValLysLeuAlaLysThrVal 435
                                                                                                                                                                                                                                                                                                                        GTGCTGGCTTCCTGCTGCTTCAGCTGGTTTGGCTTCTTCTTCCTTGGCGGCAGCT 485
  GCGGCTTCCTACAACCTCCTTTGTCTCAACTTCAACTTCAACAGGAGCTTCAGCTTTG
                                                                                GTCTCT----
                                                                                                    LeuAlaThrAspProAlaValLysLysAlaGluSerPheIleGlnAspLysValLysSer 415
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                                                                                                                                                            TCAGTAGTCTCTTTGGCCTTCTCAACAGCGGCTTCTGCC-----TCCACTGCTGGA
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Tel: 00-33-(0)5-49-45-41-85
Fax: 00-33-(0)5-49-45-41-86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Abbal, P., Agasse, A., Ageorges, A., Atanassova, R., Couture, C., Dedaldechamp, F., Delrot, S., Glissant, Hamdi, S., Romieu, C. and Terrier, N.
Generation of Expressed Sequence Tag from Grape B
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BQ800337

BCST 7372 Veraison Grape berries SuperScriptTM Plasmid Library Vitis vinifera cDNA clone PT007F03 3', mRNA sequence.

BQ800337

BQ800337.1 GI:22015303

EST:
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UMR CNRS 6161, Universite de Poitiers
Batiment Botanique, 40 Avenue du Rect
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Unpublished (2002)
Contact: Delrot S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Generation of Expressed Sequence Tag from Grape Berry or seeds) at Various Developmental Stages
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Email: Serge.Delrot@univ-poitiers.fr
Seq primer: SP6.
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/note="Organ: Fruit; Vector: psPoRT1;
Site_2: NotI; Oriented library"
a 254 c 140 g 269 t
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/db_xref="taxon:29760"
/clone="PT007F03"
                                                                                -CCTTCGGTT--
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,D., Grimple
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                                                                                                                                                                                                                                                                         Submitted (08 SEP-2000) Genoscope - Centre National de Sequencage, 2 rue Gaston Cremieux, CP 5706, 91057 EVRY cedex, FRANCE. (E-mail: seqrefégenoscope.cns.fr - Web: www.genoscope.cns.fr)
This GSS is part of a random genomic sequencing program of thirteen yeast species: Saccharomyces bayanus var. uvarum, Saccharomyces exiguus, Saccharomyces servazzii, Zygosaccharomyces rouxii, Saccharomyces servazzii, Zygosaccharomyces rouxii, Saccharomyces kluyveromyces thermotolerans, Kluyveromyces lactis var. lactis, Kluyveromyces marxianus var. marxianus, Pichia angusta, Debaryomyces hansenii var. hansenii, Pichia sorbitophila, Candida tropicalis and Yarrowia lipolytica. Genomic inserts of 3 to
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Blandin,G., Llorente,B., Malpertuy,A., and Dujon,B.
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                                                        /clone_lib="XBB0AA"
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AY107053 1763 bp
Zea mays PCO082530 mRNA sequence.
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Matches:
Conservative:
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                   mRNA
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464 347 404 327 350 307 326 287 284 267 224

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Qy 127 Db 472	Qy 115 Db 412	Qy 98 рь 352	Oy 78	Qy 58 Db 295	Qy 38 Db 277	Oy 19 Db 217	US-09-825	Alignment Pred. No. Score: Percent S Best Loca Query Mat DB:	SOULCE SO	FEATURES	TITLE JOURNAL	JOURNAL REFERENCE	AUTHORS	VERSION KEYWORDS SOURCE ORGANISM	ACCESSION
AlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuAlaThr 146	TTACAGACGTGACCTCCCACGTCATCCCCATCGCCAAGGAGCTCGGCGTTCAGT 471	ThrIlealaGluThrPheAlaLysAlaGluLysPheAspArgLeuAlaThr 114 ::::::   ::: GCTCAGCGCACCTCCTGGGCCCGCTTATTGCCGGCGCGCCCCCACGCGTCTCGGCCGTCA 411	lleAspAlaLeuValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThrProAla 97                 :::	ArgPheSerValIleGlySerProAspGluArgAspAlaAlaLeuAlaHisAsnGluGln 77	SerCysArgAspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAlaHis 57           TCCTGCCGTTCGACGCGT294	ArgThrAlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerThrThr 37	-414-66 (1-487) x AY107053 (1-1763)	Alignment Scores: 0.913 Length: 1763  Score: 107.00 Matches: 127  Percent Similarity: 34.148 Conservative: 56  Best Local Similarity: 23.698 Mismatches: 189  Query Match: 1.1 Gaps: 25	/ Organism="Zea mays" / Organism="Zea mays" / Organism="Zea mays" / Ob_xref="MaizeDB:634619" / Ob_xref="taxon:4577" / Clone_lib="Maize Mapping Project/DuPont Cornsensus / Clone_lib="Maize Mapping Project/DuPont Cornsensus / Clone_lib="Maize Mapping Project/DuPont Cornsensus / Clone_lib="Maize Mapping Project of EST / Other="this sequence is part of a project of EST / assemblies resulting from the application of public contigs to seed DuPont contigs; this resource was / assembled by DuPont as part of a collaboration for the overgo addressing of BACs in conjunction with the Maize Mapping Project"  341 a 543 c 535 g 344 t	Location/Qualifiers	Direct Submission Submitted (25-APR-2002) Maize Mapping Project, University of Missouri, Columbia, MO 65211, USA	Unpublished (2002) Unpublished (2002) Unpublished (2003)	Hainey.C.F., Dolan,M., Miao,G.H., Vogel,J.M., Whitsitt,M.S., Arthur,L.W., Hanafey,M., Morgante,M. and Tingey,S.V. Maize Mapping Project/DuPont Consensus Sequences for Design of	-	AY107053

Qy 432 laLysThrValLysAspMetSerGlyGluAlaIleSerSerThrGlyAlaSerL 450	Фр
Qy 412 ysValLysSerThrAlaSerSerThrThrSerTyrValAlaAspGlnThrValLysLeuA 432	оу Оу
Qy 393 hrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGluSerPheIleGlnAspL 412	Db Qy
Qy 384SerValGlyValPheAlaGlyTrpThrT 393 Db 1224 CGACCACCGCGTGAACGCCATGGTAACGGTGAGCGGTGGGGTTGGGATGGGATGGGATGGGACCA 1283	Qy Db
Qy 368 Asp-SerAlaThrLysAlaAlaValSerGlnLeuSerAsnLeuVal-Gly 383   SerAlaThrLysAlaAlaValSerGlnLeuSerAsnLeuVal-Gly	Dh Dh
Ile	Qy Db
Qy 328 GlyLeuLysAlaValArgSerLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAla 347	Qy Db
Qy 308 GlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAspValAlaThrAsp 327	D <sub>b</sub>
cLysAlaIleLys ::: GCGAGGAGTTCCT	Qy Db
Qy 275PheValLeuGlyMetLysAspLysGluProLysAlaAla 287     :::   Db 973 AACTGTCGGTTCCTTTGGGTGCTCAAAACCACAACGGTGGATAGGGACGACGACGCCCGTG 1032	Qy Db
Qy 261 MetLeuSerValGlnSerArgAspGlnLeuArgGlyGlyAla 274	Qy Db
1LeuValAlaAsnAlaG      9 GTTGCCTGGCTTGACGAGCAGCCAGCGCGGTCTGTGGTGTACGTCG	Db Qy
6SerValGlnGl         9 CTCATGTCGCAGCAAAA	Oy Db
Qy 226 Val	Qy Dh
Oy 207 ValValAspMetGlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThr 225	Qy Db
7 LysLeuHisAspAlaMetAlaValSer        0 AAACTCTTCACCAAGCAGTTCATC	Qy Db
Qy 167 GlyThrLysMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerProAsp 186	Qy dd
Qy 147 ProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnVal 166	Qy Db

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Contact: Delrot S.
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Fax: 00-33-(0)5-49-45-41-86
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Seq primer: SP6.
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/note="Organ: Fruit; Vector: pSPORT1; Site_1: Sal1;
Site_2: Not1; Oriented library"
a 251 c 138 g 265 t
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/cultivar="Ugni blanc"
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Development of a genetically and physically anchored EST resource for barley genomics: Blumeria infected incompatible (Mla13) seedling lasf cDNA library
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Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliophyta; Liliopsida; Poales; Poaceae; Pooidea; Triticeae; Hordeum.

1 (bases 1 to 850)
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850 bp mRNA linear EST 23-OCT-2001

HV_CEa0012J12f Hordeum vulgare seedling green leaf EST library

HVcDNA0004 (Blumeria challenged) Hordeum vulgare cDNA clone

HV_CEa0012J12f, mRNA sequence.

BF265543
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Total hg bases = 429
Seq primer: AATTAACCCTCACTAAAGGG
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743.
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Location/Qualifiers
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'note-"vector: lambdaZAR; Site_1: ECOR1; Site_2: Xho1; C.I. 16155 (Mla13) plants were greenhouse grown in the R Wise lab at Iowa State University, Ames, IA; 7 day old green seedlings were challenged with isolate A27 (AvrMla1: ) of Blumeria graminis f. sp. hordel, and leaves were harvested 20 and 24 hr post-inoculation and snap frozen; uninoculated leaves were harvested 20 and 24 hr post-inoculation (Wei, Wise). In the TJ Close lab at the University of California, Riverside, total RNA was prepared from each sample pool, equal quantities of all three RNA pools were
                                                                                                                                                                                                                               /clone="HV_CEa0012J12f"
/clone_lib="Hordeum vulgare seedling green
library HVCDNA0004 (Blumeria challenged)"
/tissue_type="seedling green leaf"
/lib_host="TJC121"
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/cultivar="CI16155 (Mla13)"
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                                                                                                  AlaMetAlaValSerValLysArgHisSerProAlaLeuGlyArgGlnValValAspMet 210
                                                                                                                                                             CTCGGAGAACGGGCCCAGGTACTTGGGACGGTCAGGGCCGTACCAGAT
                                                                                                                                                                                                             MetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerProAspLysLeuHisAsp 190
                                                                                                                                                                                                                                                                     GTCCCACCCGTAGTCGCCGGGGAACTCGCCGGT-----CAGGTACGACGGGGTCTG
                                                                                                                                                                                                                                                                                                                     LeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMet 170
                                                                                                                                                                                                                                                                                                                                                                             GATCACCTCCAGCTCCCTGTTCTTGGCGAAGGTCTCTGGGTCAGCCGACAATCCCGGGGT 299
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   http://www.genome.clemson.edu/projects/barley. To order this clone see http://www.genome.clemson.edu/orders Alsi see Close TJ, Wing R, Kleinhoffs A, Wise R (2001) Genetically and physically anchored EST resources for barley genomics. Barley Genetics Newsletter 31:29-30.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            combined, poly(A) RNA was purified from the mixture, one CDNA library was made, and l million pfu were in vivo excised to give pBluescript SK(-) cDNA phagemids (Choi, Close). Phagemids were plated and picked at the Clemson University Genomics Institute (CUGI) (Begum, Palmer, Prisch, Atkins and Wing). Plasmid DNA preparations, DNA sequencing and sequence analysis were performed at CUGI (Wing, Yu, Frisch, Henry, Simmons, Oates, Rambo, Main). The sequence has been trimmed to remove vector sequence and contains a minimum of 100 bases of pred value 20 or
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                                                                                                                                                                                                                                                                                                                                                                                  Submitted (08-SEP-2000) Genoscope - Centre National de Sequencage, 2 rue Gaston Cremieux, CP 5706, 91057 EVRY cedex, FRANCE. (E-mail: seqrefégenoscope.cns.fr - Web: www.genoscope.cns.fr)
This GSS is part of a random genomic sequencing program of thirteen yeast species: Saccharomyces bayanus var. uvarum, Saccharomyces exiguus, Saccharomyces servazzii, Zygosaccharomyces rouxii, Saccharomyces servazzii, Zygosaccharomyces rouxii, Saccharomyces kluyveromyces thermotolerans, Kluyveromyces lactis var. lactis, Kluyveromyces marxianus var. marxianus, Pichia angusta, Debaryomyces hansenii var. hansenii, Pichia sorbitophila,
                                                                                                                                                                                                                                                                                       Candida tropicalis and Yarrowia lipolytica. Genomic inserts of 3 to 5 kb were prepared and both extremities were sequenced. See keywords for description of this sequence and for the sequence of the other extremity of this insert.
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Pichia angusta
Eukaryota; Fungi;
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Genomic exploration of the hemiascomycetous yeasts:
yeast species for molecular evolution studies
FEBS Lett. 487 (1), 3-12 (2000)
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                                                                                                                        /organism="Pichia angusta"
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                                                                                                                          ProGluAlaAspIleGluGluGly 470
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Best Local Similarity:
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436 LysAspMetSerGlyGluAlaIleSerSerThrGlyAlaSerLeuArgSerThrValAsn 455
                                                                                                                          387
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                                                                               ThrAlaSerSerThrThrSerTyrValAlaAspGlnThrValLysLeuAlaLysThrVal 435
                                                                                                                                             LeuAlaThrAspProAlaValLysLysAlaGluSerPheIleGlnAspLysValLysSer :::::
                                          GCGGCTTCCTCTACAACCTCCTTTGTCTCAACTTCAACTTCAACAGGAGCTTCAGCTTTG
                                                                                                                                                                                                                                              SerGlnLeuSerAsnLeuValGlySerValGlyValPheAlaGlyTrpThrThrAlaGly
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                                                                                                                          GTCTCT-----CCTTCGGTT----
                                                                                                                                                                                                            TCAGTAGTCTCTTTGGCCTTCTCAACAGCGGCTTCTGCC----TCCACTGCTGGA
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Generation of Expressed Sequence Tag from Grape Berry (skin, pulp or seeds) at Various Developmental Stages
Unpublished (2002)
Contact: Romieu C.
Unite de Recherche des Produits de la Vigne
Institut National de la Recherche Agronomique
Institut National de la Recherche Agronomique
2, place Viala, 34 060 Montpellier Cedex 01, France
Tel: 00-33-(0)4-99-61-28-62
Fax: 00-33-(0)4-99-61-28-57
Fax: 00-33-(0)4-99-61-28-57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EST 4875 Ripening Grape berries Lambda Zap II Library Vitis vinifera cDNA clone RT022G09 3', mRNA sequence. BQ795937 BQ795937.1 GI:22010903
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Email: romieu@ensam.inra.fr
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /Clone_lib="Ripening Grape berries Lambda Zap II Library"
/dev_stage="ripening stage"
/note="organ: Fruit; Vector: Lambda Zap II; Site_1: Eco Ri
/note="organ: Fruit; Vector: Lambda Zap II; Site_1: Eco Ri
; Site_2: XhOI; Oriented library, construction described
in Generation of ESTs from grape Berry (skin, pulp or
seeds) at various developmental stages by Terrier,N.,
Ageorges,A., Abbal,P., Romieu,C. in J. Plant Physiol. 158
(11): 1575-83 2001*
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/clone="RT022G09"
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/cultivar="Shiraz"
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29.80%
4.36%
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Chambergo, F. S., Bonaccorsi, E.D., Ferreira, A.J.S., Ramos, A.S.P., Perreira, J.R.Jr., Abrahao-Neto, J., Farah, J.P.S. and El-Dorry, H. Elucidation of the metabolic fate of glucose in the filamentous fungus Trichoderma reesei using expressed sequence tag (EST)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BM077210
                                                                                                                                                                                                                                                                                                                                                                                                                                                              FORWARD: Universal M13 forward primer BACKWARD: Universal M13 reverse primer Plate: 44 row: A column: 8 Seq primer: M13 reverse primer High quality sequence stop: 806
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Tel: (55) 11-38183848
Fax: (55) 11-38183848
Email: dorry@iq.usp.br
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hypocrea jecorina.
Hypocrea jecorina
Eukaryota; Fungi; Ascomycota; Pezizomycotina; Sordariomycetes;
Hypocreales; Hypocreaceae; Hypocrea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BM077210 806 bp mRNA linear EST 05-FEB-2002 TrEST-A4136 TrEST-A Hypocrea jecorina cDNA clone Tr-A4136 5', mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Contact: El-Dorry, Hamza
Department of Biochemistry
Institute of Chemistry, University of Sao Paulo
Avenida Professor Lineu Prestes, 748, Sao Paulo,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 analysis and cDNA microarrays
J. Biol. Chem. 277 (16), 13983-13988 (2002)
21950703
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Email: dorry@iq.usp.br
PCR PRimers
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                                                                                                                                    171
                                                                                                                                             /organism="Hypocrea jecorina"
/strain="QM9414 (ATCC26921)"
/db_xref="taxon:51453"
                                                                                                                                                                                                                                                                                                                                                                                                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                      /clone_lib="TrEST-A"
/sex="Asexual"
                                                                                                                                                                                                                                                                                                                                                     /clone="Tr-A4136"
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37.73%
27.73%
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Matches:
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Search completed: January 31, 2003, of Job time : 1589.62 secs	gSerAla	yGluAlaIleSerSerThrGlyAlaSerLeuArgSerThrValAsnAsnLeuArgHisAr :::		SerPheIleGlnAspLysValLysSerThr-AlaSerSerThrThrSerTyrValAla	AlaGlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGlu	SerAsnLeuValGlySerValGlyValPhe ::	ThrLysAsnleThrAspSerAlaThrLysAlaAlaValSerGlnLeu	LysAsnGlyLeuAlaLeuAlaGlyGlyTyrAlaGlyValSerLysLeuGlnLysMetAla	ValAlaThrAspGlyLeuLysAlaValArgSerLeuValSerAlaThrSerLeuThr	ArgMetAlaGlyLeuProLeuAsp	IleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLys	-414-66 (1-487) x BM077210 (1-	13
2003, 07:16:29	ProGluAlaAs          TTAACCCGAGGAAG <i>I</i>	erLeuArgSerThrVa :: CACCGTCTTTAACAA	alLysLeuAlaLysTl ::: CAACTTCATCTTCAA(	rThr-AlaSerSerT          SACGCCTCTCACGTAC	aThrAspProAlaVal	SerAsnLeuVal      GACCAAGGAGCTTCCC	rAspSerAlaThrLys    :::     GACGCCGCCGTCGCC	yTyrAlaGlyValSej     	largSerLeuVal    CGACGTCGACTTCAGO	ArgMet     CACCGTCCTCCGCCGC	aAlaLeuAsnAlaGly  :::          caGCGGCAACGTCGG	(1-806)	Gaps:
	<pre>spIleGluGluGlyGly 471   </pre>	alAsnAsnLeuArgHisAr 460 :::          CTTCGAACCTTCGAAGCCG 716	nrValLysAspMetSerGl 440        :::    3AGTGCTGGATCTAAGC 660	nrThrSerTyrValAla 425                ACGCTCGTCTACAGCGGG 602	alLysLysAlaGlu 406         ACCAAGGTCGAGATCACG 542	SerAsnLeuValGlySerValGlyValPhe 388	sAlaAlaValSerGlnLeu 378         :::  GCCGGCGTCAAGCGCTTC 461	rLysLeuGlnLysMetAla 362   :::           ACCGTCGGCAGCGCCGCC 401	SeralaThrSerLeuThr 342                 TCCGTCGAGTCCCTGACG 350	LAlaGlyLeuProLeuAsp 323      GCCTCCTCCTCCCATCC 290	yLys 315     DAAGGTCGTCCTCCCCGCC 230		10
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-DB-ISSued_Patents_NA -QFMT-fastap -SUFFIX-pDr.rn1 -MINMATCH-0.1 -LOOPCL-0
-LOOPEXT-0 -UNITS-bits -START-1 = END-1 - MATRIX-bitssum62 -TRANS-human40.cd1
-LIST-45 -DOCALIGN-200 -THR_SCORE-pct -THR_MAX-100 -THR_MIN-0 -ALIGN-15
-MODE-LOCAL -QUTFMT-pto -NORM-ext -HEAPSIZE-500 -MINLEN-0 -MAXLEN-200000000
-USER-US09825414_@CGN_1 1_40_@runat_2801203_161742_26114 -NCPU-6 -ICPU-3
-NO_MAP -LARGEQUERY -NEG_SCORES-0 -WAIT -LONGLOG -DEV_TIMEOUT-120
-NARN_TIMEOUT-30 -THREADS-1 -XGAPOP-10 -XGAPEXT-0.5 -FGAPOP-6 -FGAPEXT-7
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-MODEL=frame+_p2n.model
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seq length: 2000000000
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6.1 9542 4 US-08-968-685A-9
5.8 7100 4 US-09-308-375-1
5.5 3300 1 US-08-194-290-6
5.5 3300 2 US-08-614-377A-6
5.5 3300 2 US-08-614-377A-6
5.5 5330 2 US-09-142-648B-6
5.5 5330 2 US-09-133-702B-7
5.3 446819 4 US-09-453-702B-7
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5.3 32768 4 US-09-103-840A-1
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                                                    TELEFAX:
                                                                    TELEPHONE:
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## ALIGNMENTS

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Sequence 9, Application US/08968685A Patent No. 6214981
               TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO:
                                                                                                                                          APPLICATION NUMBER: US/08/96:
FILING DATE: No. 6214981embe
CLASSIFICATION:
ATTORNEY/AGENT INFORMATION:
NAME: Baldwin, Geraldine F.
REGISTRATION NUMBER: 31,232
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COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                REFERENCE/DOCKET NUMBER: 79
TELECOMMUNICATION INFORMATION:
SEQUENCE CHARACTERISTICS:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: TUCKER, KENNETH APPLICANT: PLOSILA, LAURA
                                                                                                                                                                                                                                                                                                  COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: PatentIn Release #1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1155 Avenue of the Americas
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TYPE: nucleic acid
STRANDEDNESS: single
TOPOLOGY: linear
MOLECULE TYPE: DNA
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1952 AAAAACACCAATAGTAACAAACAAATCCAAGTCGGTGCTGATGGCATTACATTTACTGAT 2011
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                      Gln-----SerArgAspGlnLeuArgGlyGlyAlaPheValLeuGlyMetLysAsp 281
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LeuAlaHisAsnGluGlnIleAspAlaLeuValGluThrArg-----AlaAsnArg 88
                                                                                                SerThrAlaGlyGlyLeu---ValAlaAsnAlaGlyPheGlyAspArgMetLeuSerVal 264
                                                                                                                                                                   ValLeuAlaProAlaLeuAlaSerArgProSerValGlnGlyAlaValAspPheGlyVal 245
                                                                                                                                                                                                    CTCAAAGGTGAAAACGGTGTTGATGTTACAACC-----
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                                                                                                                                                                                                                                                                                                                                                                 AspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerProAspLysLeuHisAspAla 191
                                                                                                                                                                                                                                                                                                                                                                                                 CTTAAAAAAGTTAACCAAACCGCTGAAAGTGCTCTACAAACCTTTACCGTTAAAAAGGTA 1738
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                                                                   AACCAAAATAACGGTCTGACCGTTGGCAACAGCACCCTAAACAACGATGGCTTATCTGTT 1951
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -----CGCCTT---ACCACAGATAAAATTGGTTTTACCAATGAT-----ATG 1558
                                                                                                                                                                                                                                 ----GlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThr 225
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90	AlaileLysSerAlaSerTyrSerGly	300 1846	д 2
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283		264	å
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263	GlyLeuValAlaAsn	250	ρ
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249 1665	GInGlyAlaValAspPheGlyVal ::: GAGCTAAATGATCTTATTGGTTAT	238 1606	g S
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205 1491	AspLysLeuHisAsp <i>P</i>         GATGATACAGTTAAC <i>P</i>	186 1432	β δ
185	GlyThrLysMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerPro ::: ::    :::    :::    :::    :::    :::    :::	167	ρ
1431		1372	δ
166 1371	ProLeuLysProLeuThr ::: AAAATCACAGATATTCTT	147 1312	д 9
146	AlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuAlaThr:::   :::   :::   :::   :::    :::    :::	127	9
1311		1261	8
126	GluLysPheAspArgLeuAlaThrThrAlaSerSerAlaPheGluAsnThrProPheAla	107	g
1260	::	1201	Qy
106	ATCTCCGGTTCTTTATTCTACGGAGCTATCTCTGGACTTAAAG	104	β
1200		1141	δ
103	SerGluGlyGluThrProAlaThrILeAlaGluThrPhe	91	용
1140		1090	왕
90	HisasnGluGlnIleAspAlaLeuValGluThrArgAlaAsnArgLeuTyr	74	95
1089		1030	5
73 1029	AlaAlaHisArgPheSerVal-     :::  CCAGTAAATAGTCTTAATGTAA	55 970	유 2
54	SerThrThrSerCysArgAspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPhe	35	β
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SULT 3 1:08-194-29 1:08-194-29 Patent No. GENERAL 1 APPLICE APPLICE APPLICE APPLICE APPLICE APPLICE APPLICE APPLICE APPLICE ADDRES ADDRES ADDRES CITY STATE COUNT ZIP: COMPUTE	454 2683	436 2623	423 2563	408 2503	2443	2383	2 7	362 2263	346 2206	ω	oo ⊢	2026	315	1966	315	309 1906
SULT 3 -08-194-290-6 -08-194-290-6 Sequence 6, Application US/08194290 Sequence 6, Application US/08194290 Patent No. 5500353 GENERAL INFORMATION: APPLICANT: Smit, John APPLICANT: Bingle, Wade H TITLE OF INVENTION: Bacterial surface protein expression NUMBER OF SEQUENCES: 10 CORRESPONDENCE ADDRESS: ADDRESS: ADDRESS: ADDRESSE: Shlesinger, Arkwright & Garvey STREET: 3000 South Eads Street CITY: Arlington STATE: Virginia COUNTRY: USA ZIP: 2202 COMPUTER READABLE FORM:	VALASNASDLEUATG 458 :::     ::: ATTGAGAATACTAAA 2697	LysAspMetSerGlyGluAlaIleSerSerThrGlyAlaSerLeuArgSerThr 4	TyrValAlaAspGlnThrValLysLeuAlaLysThr	PheTleGIn	GAGCAGAGCCAGCAAACCAATGTCGAAGCAATTACGACCAATAAAGACTCCACTGATAAA	TEPTHITHIALGLYLEUALTHEASPEROALAVALLYSLYSALA	ACTGCTCTTCGAGGGTTGCTTGTTTCAACTTTAGTTGGCGGTGCATTTGCTGCTTTGGGA	AlaThrLysAsnIleThrAspSerAlaThrLysAlaAlaValSerGln	LeuAlaLeuAlaGlyGlyTyrAlaGlyValSerLysLeuGlnLysMet 3	ArgSerLeuValSerAlaThrSerLeuThrLysAsnGly 3	ArgMetAlaGlyLeuProLeuAspValAlaThrAspGLyLeuLySAlaVal :::	AACTTCACTGAATTTGCTATTGCAGCTTCTGATGCTTTTATTAGCGACGGATTAATTGAA 2		TGGAGTGAGCAGCAAAAGTATGCAGATAGTCTACAAGCTAGGGTAAATAAGCTTCAAAAT 2		AlaAlaLeuAsnalaGlyLysAlaAlaLeuAsnalaGlyLys
		682	622	562	502	405 2442 407	390 2382	77 322	61	205	<u> </u>		315	2025	315	315 1965

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; ORGANISM: Caulc
; STRAIN: CB 15
US-08-194-290-6
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INFORMATION FOR SEQ ID NO: 6:
SEQUENCE CHARACTERISTICS:
LENGTH: 3300 base pairs
TYPE: nucleic acid
STRANDEDNESS: double
TOPOLOGY: linear
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TELECOMMUNICATION INFORMATION:
TELEPHONE: 703-684-5600
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COMPOTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
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                  166 ValGlyThrLysMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerPro 185
                                                                                                  146 ThrProLeuLysProLeuThrProLeuTleSerGlyAlaLeuSerGlyAlaMetAspGln 165
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 569 GCGGCCGCGTGGCTTTCCTGAGCCGCCAGGCCAACATCGACTACCTGACC------
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: US/08/194,290 FILING DATE: 09-FEB-1994 CLASSIFICATION: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                         62 IleGlySerProAspGluArgAspAlaAlaLeuAlaHisAsnGluGlnIleAspAlaLeu 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22
                                                                                                                                                              ---SerValLeuGlnTyrMetGlnProAlaIleAsnLys-----GlyAspTrpLeuAla 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SerAspAlaSerLeuAlaSerSerValArgSerValSerThrThrSerCysArgAsp 41
                                                                                                                                        GTTTCGTACGCCCAGACGGTCGCCACCGCCTATGACAAGATCATCGGCAACGCCGTCGCG
                                                                                                                                                                                                            CTGGCCACGGGCGCGGCGGCCGGC------GCGACGGCTTTCGCCGCCGCCTACACGGGC 487
                                                                                                                                                                                                                                                                                 -----TTCGCTCAGGAAAACCGCTTCATCAACTTCTCGATCAAC 433
                                                                                                                                                                                                                                                                                                                    ProAlaThrIleAlaGluThrPheAlaLysAlaGluLysPhe------AspArg 111
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Matches:
Conservative:
Mismatches:
Indels:
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                                                                   GCCGCTGGCGTCGACGTC
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REST US-( ; Se ; Pe ; Pe	Qy Db	Qy Db	Db Oy	Db dg	Qy Db	Дb	Db	Qу	ДУ	Qу ДЪ	Db Qy	ДУ	ОУ	Qу	Qy Db	Qy Db
RESULT 4 US-08-614-377A-6 US-08-614-377A-6 ; Sequence 6, Application US/08614377A ; Sequence 10. S976864 ; Patent No. 5976864 ; GENERAL INFORMATION:     APPLICANT: Smit, John APPLICANT: Bingle, Wade H.     APPLICANT: No. 5976864ellini, John F.     TITLE OF INVENTION: EXPRESSION AND SECRETION OF	b 1415 ACCACG 1420	y 425 AlaAspGlnThrValLysLeuAlaLysThrValLysAspMetSerGlyGluAlaIleSer 444	y 405 AlaGluSerPheIleGlnAspLysValLysSerThrAlaSerSerThrThrSerTyrVal 424	385 1253	y 366 IleThrAspSerAlaThrLysAlaAlaValSerGlnLeuSerAsnLeuValGlySer 384 :::	yy 359GINLYSMETALATHYLYSASH 365 b 1133 ACCAGCGGCGCGCGCTCAAACCGTCACCGCCGGCGCTGGCCAGAACCTGACCGCCACGACC 1192	342 ThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyrAlaGlyValSerLysLeu 35	yy 322 LeuAspValAlaThrAspGlyLeuLysAlaValArgSerLeuValSerAlaThrSerLeu 341	302 LysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLy 1004	y 282 LysGluProLysAlaAlaLeuSerGluGluThrAspTrpLeuAspAlaTyrLysAlaIle 301	y 273	y 256 GlyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGly 272	y 243 PheGlyValSerThrAlaGlyGlyLeuValAlaAsnAla 255 :::	y 226 ValLeuAlaProAlaLeuAlaSerArgProSerValGlnGlyAlaValAsp 242	205 GlnValValAspMetGlyIleAlaValaside	186 AspLysLeu 620

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US-08-614-377A-6
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INFORMATION FOR SEQ ID NO: 6:
SEQUENCE CHARACTERISTICS:
LENGTH: 3300 base pairs
TYPE: nucleic acid
TYPE: nucleic acid
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FILING DATE: 12-MAR-1996
CLASSIFICATION: 435
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/194,290
FILING DATE: 09-FEB-1994
CLASSIFICATION: 435
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NAME: TSAO, Y. ROCKY
REGISTRATION UTWHER: 34053
REFERENCE/DOCKET NUMBER: 0810
TELECOMMUNICATION: INFORMATION:
TELEPHONE: 617-542-8906
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version
CURRENT APPLICATION DATA:
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ORIGINAL SOURCE:
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ADDRESSEE: Fish & Richardson
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TITLE OF INVENTION:
NUMBER OF SEQUENCES:
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GTCGACTCGACCAACACCAACGACCTGAACGACGCGTACTACTCGAAG-----
                                                                                   ValGluThrArgAlaAsn---
                                                                                                                        GCTGGT----
                                                                                                                                                    IleGlySerProAspGluArgAspAlaAlaLeuAlaHisAsnGluGlnIleAspAlaLeu
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 GCTTCGGGCACCGTGTCGGTGAGCGTCGCGAACTCGAGCACCACCACCGGGCGCTATC 1357
                                                                                      ValGlyValPheAlaGlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLys 404
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                                                                                                                                                                                                                                                                                                                                                                                                           GCTGCGGTTACGGCT--
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835 255

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Qy 112 LeualaThrThralaSerSerAlaPheGluAsnThrProPheAlaAlaAla 128	326 GCTGGT	SerAspA         TCGGACG LeuGlnA :::    ATCCAGA IleGlyS	Alignment Scores:  Pred. No.:  132.00  Score:  Percent Similarity:  36.51%  Best Local Similarity:  20.95%  Mismatches:  16  Query Match:  5.48%  Indels:  Gaps:  US-09-825-414-66 (1-487) x US-09-142-648B-6 (1-3300)	PRIOR FILING DATE: 1996-03-12 NUMBER OF SEQ ID NOS: 12 SOPTWARE: FastSEQ for Windows Version 4.0 SEQ ID NO 6 LENGTH: 3300 YYPE: DNA ORGANISM: Caulobacter crescentus FEATURE: NAME/REY: CDS LOCATION: (101)(3178) US-09-142-648B-6	GENERAL INFORMATION:  APPLICANT: Smit, John F.  APPLICANT: Bingle, Wade H.  APPLICANT: NO. 6210948ellini, John F.  APPLICANT: NO. 6210948ellini, John F.  TITLE OF INVENTION: EXPRESSION AND SECRETION OF HETEROLOGOUS POLYPEPTIDES FROM CAULA FILE REFERENCE: 08106/002002  CURRENT APPLICATION NUMBER: US/09/142,648B  CURRENT FILING DATE: 1999-03-30  PRIOR APPLICATION NUMBER: PCT/CA97/00167  PRIOR FILING DATE: 1997-03-10  PRIOR APPLICATION NUMBER: US/07/614,377	Qy 425 AlaAspGlnThrValLysLeuAlaLysThrValLysAspMetSerGlyGluAlaIIleSer 444
Qy 425 AlaAspGlnThrValLysLeuAlaLysThrValLysAspMetSerGlyGluAlaIleSer 444	385 ValGlyValPheAlaGlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLys	Qy 342 ThrLysAsnGlyLeuAlaGlyGlyTyrAlaGlyValSerLysLeu 358	LysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuPro	05 8 9 6 3 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Qy 206 GInValValAspMetGlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThr 225 :::	Qy 146 ThrProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGln 165

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; LOCATION: 543..2324
; OTHER INFORMATION: ,
US-08-591-079-9
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                                                                                                                                                                                                                                                                                                                         Percent Similarity:
                                                                                                                                                                                                                                                                                                                                            Score:
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                                                                                                                                                                                                                                                                                                                                                                     Alignment Scores:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:

NAME: Livnat, Shmuel

REGISTRATION NUMBER: 33,949

REFERENCE/DOCKET NUMBER: 1566;

TELECOMMUNICATION INFORMATION:

TELEPAX: (202) 887-1500

TELEFAX: (202) 887-0764

TELEX: 90-4030 MRSNFOERSWSH

INFORMATION FOR SEQ ID NO: 9:

SEQUENCE CHARACTERISTICS:

LENGTH: 593 base pairs

TYPE: nucleic acid

CTBANDENNESS: 1161
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COUNTRY: USA
ZIP: 20006-1812
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/591,079
                                                   2493
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MOLECULE TYPE:
ORIGINAL SOURCE:
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                                                                                                                                                                          2433 CAATCCGTTAGCGCTAAAGATATTCTGAATAGTATTGGTATTAGCAGCAGTAAAGTCAGT 2492
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT: Zychlinksky, Arturo
APPLICANT: Chen, Yajing
                                                                                 41 AspLeu----
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CITY: Washington
43 GlnAlaïleThrAspTyrLeuLysHisHisValPheAlaAlaHisArgPheSerValIle 62
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                                                GACCTGGGGTTGAGTCCTACACTGAGCGCGCCTGCGCCAGGGGGTATTAACGCAAACCCCC
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Matches:
Conservative:
Mismatches:
Indels:
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3446	GAACGTTCCGAGCAGAATTAGCCAGGTGAGATAACCGGGTTGCCAGC	3399	B	
387	AspSerAlaThrLysAlaAlaValSerGlnLeuSerAsnLeuValGlySerValGlyVal	368	Qy	
3398	GTCGGTGGTATTGCAGGGCGTCCAGGCAGTACGCCGCTACTCAG	3354	ф	
367	LeuAlaGlyGlyTyrAlaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThr	348	γQ	
3353	GATCTGATTATGAAGAACTCAGTCACG	3327	dd L	
347	GlyLeuLysAlaValArqSerLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAla	328	Q <sub>V</sub>	
3326	ACCCGAATCGATGCGCGCAAGATGCAGATGACGGGC	3291	Db	
327	AlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAspValAlaThrAsp	309	Qy	
3290	TCGAAACGTCTTGAGTCTGTCGAATCCGATATTCGTCTTGAGCAGAATACCATGGATATG	3231	윱	
308	SerGluGluThrAspTrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGly	289	ОУ	
3230	CAAATC	3201	ДĎ	
288	GlnLeuArgGlyGlyAlaPheValLeuGlyMetLysAspLysGluProLysAlaAlaLeu	269	Qy	
3200	GCCGGAACCAGCGCCACGGAAAGTCTGGGTATTAAAAACAGTAATAAA	3153	ДD	
268	GlyGlyLeuValAlaAsnAlaGlyPheGlyAspArgMetLeuSerValGlnSerArgAsp	249	Qy	
3152	GGTACCGATGCGAAGAAATCTTAATGATGCGACGCTTAAATCTAAT	3105	ф	
248	ProAlaLeuAlaSerArgProSerValGlnGlyAlaValAspPheGlyValSerThrAla	229	Оу	
3104	GATTCTCTGAAATCGTTAAATATGAAGAAAACC	3072	Db	
228	AspMetGlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThrValLeuAla	209	Оу	
3071		3012	da	
208	HisaspalametalavalSerValLysargHisSerProAlaLeuGlyArgGlnValVal	189	Qγ	
3011	ATGAAAGAGCGCGCTTAAACATAATGCCGCGAAGATCGATAAACTGACCACTGAAAGC	2952	Дb	
188		173	γ	
2951	AGCGCGCTTCAGTTGGGGATCACTGGCGTGGGCGCCAAACTGGAATATAAGGGGCTGCAG	2892	Db	
172	WetAsp	166	Оу	
2891	ACGACGGCAAGCTCCATGATGCGCGAAGGGATGAATGCGTTGTCCGGTAGTATTTCCCAG	2832	Db	
165		157	ν	
2831	GATAGCAAACTGTCTGGTAAGTTGTCATTAGTCAGTTTTGATGCAGCTAAA	2781	dα	
156	AspTrpLeuAlaThrProLeuLysProLeuThrProLeuIleSer	142	Оу	
2780	GCGCTGTTGGCTGCCGCAATACGTTAATGCTGACGTTGAACCAGGCT	2733	Db	
141	AsnThrProPheAlaAlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsnLysGly	122	Оу	
2732	CAGCAGGCAGAAAGTCGGAAAGTTTTTTGATATTAGCGGAATGTCTTCCAGTGCCGTT	2676	фd	
121	ThrPheAlaLysAlaGluLysPheAspArgLeuAlaThrThrAlaSerSerAlaPheGlu	102	Qy	
2675	GTCACGACTAAAGCGAATGAGGTT	2631	Db	
101	ValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThrProAlaThrIleAlaGlu	82	Qy	
2630	ATACCGACATGAATCAGGATTTGAATGCCCTGGCAAATAAT	2589	dα	
81	GlySerProAspGluArgAspAlaAlaLeuAlaHisAsnGluGlnIleAspAlaLeu	63	Qy	
2588	GGAACGATCACGTCCTTTTTAAAA	2553	Db	

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; TOPOLOGY: linear; MOLECULE TYPE: DNA (genomic); SEQUENCE DESCRIPTION: SEQ ID NO: 72: US-09-453-702B-72
                        Score:
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    Percent Similarity:
                                            Pred. No.:
                                                              Alignment Scores:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence 72, Applicati Patent No. 6365723 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                            TELEFAX: (608) 2: INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    3447
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                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: 60/110,955
FILING DATE: 04-DEC-1998
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: Word Perfect 8.0 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                TELECOMMUNICATION INFORMATION:
TELEPHONE: (608) 251-5000
TELEFAX: (608) 251-9166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COMPUTER READABLE FORM:
MEDIUM TYPE: Diskette,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS:
ADDRESSEE: Quarles & Brady
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TITLE OF INVENTION: No. 6365723el Sequences NUMBER OF SEQUENCES: 265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Blattner, Frederick R.
                                                                                                                                                                                                                                                            SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CTGATTCAGGAAATGCTGAAAACAATGGAGAGC-----
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: US/09/453,702B FILING DATE: 03-Dec-1999 CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                  TYPE: nucleic acid
                                                                                                                                                                                                                                                                                                                                                                 NAME: Seay, Nicholas J. REGISTRATION NUMBER: 27386 REFERENCE/DOCKET NUMBER: 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CITY: Madison
                                                                                                                                                                                                STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STATE: WI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STREET: 1 South Pinckney Street
                                                                                                                                                                                                                                      LENGTH: 46819
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                    Length:
Matches:
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  Conservative:
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Query Match:
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AGCGGCAAAAACGGGCAGAGGATATTGCATCCGCCGTGGCGCTTGAGGATGCGAGCACGAC 33063
                                                                                    TGCGACGCAGCAGCTCAGAGCAAAAGTACGGCGGAATCTGCAGCAACGCGCGCTGAGAC 33003
                                                                                                                          pLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAla-----AlaLeuAs 312
                                                                                                                                                                         GTCAGCAGCGAAGAGCAGCGCCACGACGGCATCCACGAAGGCGACAGAGGCAGCTGGTAG 32943
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Percent Similarity:
Best Local Similarity:
Query Match:
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Db 1261064 GAGCACCCACCGGGTGCGAGCCTGCGAGGTCCGAAGACCTGCCAGCCGTGCCGGACGCGCC 1261005
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; OTHER INFORMATION: "n" bases at various
; OTHER INFORMATION: represent a, t, c or
US-09-103-840A-2
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US-09-103-840A-2/c
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                                                                                   US-09-825-414-66 (1-487) x US-09-103-840A-2 (1-4403765)
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                                                                                                                                                                                                                            Pred. No.:
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GENERAL INFORMATION:
APPLICANT: FLESSCHMAN, Robert D. APPLICANT: WHITE, Owen R. APPLICANT: FRASER, Claire M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQ ID NO 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: VENTER, John C.
TITLE OF INVENTION: DNA SEQUENCES FOR STRAY
TITLE OF INVENTION: TUBERCULOSIS
FILE REFERENCE: 24256-20007.00
CURRENT APPLICATION NUMBER: US/09/103,840A
CURRENT FILING DATE: 1998-06-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: PatentIn Ver. 2.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS: 2
                                                                                                                                                                                                                                                                                                                                                                  LENGTH: 4403765
TYPE: DNA
ORGANISM: Mycobacterium tuberculosis
FEATURE:
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                      8 GlnGlnProProGlyValAlaMetGluSerPheArgThrAlaSerAspAlaSerLeuAla 27 ::: |||||||| ||| ||| ||| |||
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38.64%
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Matches:
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Qy 333 qSerLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGlyGly 351	
Db 1260101 CTGGCTCGCACCCCGGTCGAAGCCATCGGCGTCGAC 1260066	
Qy 314 yLysArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLysAlaValAr 333	
Qy 297 aTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGl 314	
Qy       278 GlyMetLysAspLysGluProLysAlaAlaLeuSerGluGlu-ThrAspTrpLeuAspAl 297         Image: Control of the control of t	
258 GlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGlyAlaPheValLeu	
Qy 245 ValSerThralaGly	
Qy 226 ValleuAlaProAlaLeuAlaSerArgProSerValGlnGlyAlaValAspPheGly 244	
Qy 206 GlnValValAspMetGlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThr 225 ::: :: ::    ::    ::    ::       ::	
Qy 186 AspLysLeuHisAspAlaMetAlaValSerValLysArgHisSerProAlaLeuGlyArg 205	
Qy 171 MetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerPro 185	
Qy 158ThrLysMet 170 Qy 158ThrLysMet 170	
Qy 140 LysGlyAspTrpLeuAlaThrProLeuLysProLeuThrProLeuIleSerGly 157	
Qy 121 GluAsnThrProPheAlaAlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsn 139 ::::::	
Qy 101 GluThrPheAlaLysAlaGluLysPheAspArgLeuAlaThrThrAlaSerSerAlaPhe 120	
Qy 81 LeuValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThrProAlaThrIleAla 100	
Qy 61 VallleGlySerProAspGluArgAspAlaAlaLeuAlaHisAsnGluGlnIleAspAla 80 :::           Db 1260833 ATCACCGGCTCCCCGCGCATCGGCCCGCGCGCGCGAACTC 1260795	
Qy 41 AspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAlaHisArgPheSer 60 :::       :::      :::	
Db 1260944 TCGGTGTGCACCTCAATCGGATCGGCTGCGCGTCCGCGGGGGGGG	
Qy 40 40	
Qy 28 Ser40 :::            :::      Db 1261004 GCGCCGGCGGCTCATCGCCTCGTGGAATGGGCGTTTGGCCGTGTTGCCGGGTGCA 1260945	

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Patent No. 6420135
Patent No. 6420135
GENERAL INFORMATION:
APPLICANT: Charles K
TITLE OF INVENTION:
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                                                           TELEFAX: (301) 309-8512
INFORMATION FOR SEQ ID NO: 71:
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                                      SEQUENCE CHARACTERISTICS:
                                                                                                      REGISTRATION NUMBER: 36,373
REFERENCE/DOCKET NUMBER: PB:
TELECOMMUNICATION INFORMATION:
TELEPHONE: (301) 309-8504
                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                         SOFTWARE: ASCII Text CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER READABLE FORM:
MEDIUM TYPE: Diskett
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                                                                                                                                                                                                                 ATTORNEY/AGENT INFORMATION:
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CLASSIFICATION: 424
                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                         OPERATING SYSTEM:
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                    LENGTH:
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                                 27/3 yAlaPheValLeuGlyMetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAs 293
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                                                                                                       aAsnAlaGlyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGl 273
                                                                                                                                             CAGTGCGTCAGCTTCAGCAAGTACCAGTGCTTCAGTCTCAGCATCAACAAGTGCTTCAGC
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Sequence 1, Application US/09103840A
Patent No. 6294328
GENERAL INFORMATION:
APPLICANT: FLEISCHMAN, Robert D.
APPLICANT: WHITE, Owen R.
APPLICANT: WHITE, Owen R.
APPLICANT: FRASER, CLAITE M.
APPLICANT: VENTER, John C.
TITLE OF INVENTION: DNA SEQUENCES FOR
TITLE OF INVENTION: TUBERCULOSIS
                                                                                                                                                                                                              Percent Similarity:
Best Local Similarity:
Query Match:
DB:
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CURRENT APPLICATION NUMBER: US/09/103,840A
CURRENT FILING DATE: 1998-06-24
NUMBER OF SEQ ID NOS: 2
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 1
1261536 GAGCACCCACCGGGTGCGAGCCTGCGAGTCCGAAGACCTGCCAGCCGTGCCGGACGCGCC 1261477
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH: 4411529
TYPE: DNA
ORGANISM: MYCObacterium tuberculosis
OTHER INFORMATION: H37Rv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2803
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2383
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                                                                          œ
                                          GlnGlnProProGlyValAlaMetGluSerPheArgThrAlaSerAspAlaSerLeuAla 27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AGCCTCAGCAAGTACTAGTGCATCGGCTTCAGCATCAACCAGTGCCT 2849
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           aSerLeuArgSerThr-ValAsnAsnLeuArgHisArgSerAlaPro 463
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         eIleGlnAspLysValLysSerThrAlaSerSerThrThrSerTyrValAlaAspGlnTh 428
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              eAlaGlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGluSerPh 408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            lArgSerLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGlyGlyTy 352
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AGCGTCGACAAGTGCGTCGGCCTCAACCAGTGCATCTGAATCGGCATCAACCAGTGCGTC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           rValLysLeuAlaLysThrValLysAspMetSerGlyGluAlaIleSerSerThrGlyAl 448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TGCGTCAGCCTCAGCATCGACAAGCGCCTCAGCTTCAGCAAGTACCAGTGCTTCAGCCTC
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         p Ser A la Thr Lys A la A la Val Ser G ln Leu Ser Asn Leu Val G ly Ser Val G ly Val Photo Renner (Control of Control of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AGCATCAACGAGTACGTCAGCTTCAGCGTCAACCAGTGCTTCAGCCTCAGCATCAACAAG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GGCCTCAACCAGCGCCTCGGCCTCAGCAAGCACCTCAGCTTCTGAATCGGCCTCAACCAG
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       pTrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAl
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126.50
38.64%
22.89%
5.26%
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                                                                                                                                                                                                   Length:
Matches:
Conservative:
Mismatches:
Indels:
Gaps:
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86
212
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27
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1	Ov 2	Qy 2 Db 1260	ОУ 258 Db 1260703	Oy 2 Db 1260	Qy 2 Db 1260	Qy 2 Db 1260	Qy 1 Db 1260	Qy 1 Db 1260	Qy 1 Db 1261	Qy 1 Db 1261	Qy 1 Db 1261	Qy 1 Db 1261	Qy Db 1261	Qy Db 1261	Qy Db 1261	Db 1261	Qy	Qy Db 1261
	297 aTyrLysAlaIleLy	278 GlyMetLysAspLys 60658	258 GlyAspArgMetLeu            0703 GGTGACCGACCTCT	245 ValSerThrAlaGly- :::     60763 GCTGCTGTCGCTGCT	226 ValLeuAlaProAla     60822 GTCGACGGCGCGGG	206 GInValvalAspMetGlyIleAlaValGInThrPheSerAlaLeuAsnValValArgThr:::: ::::	186 AspLysLeuHisAsp        60936 TTCACGCTGCACCC	171 MetAspArgAlaArg	158AlaLev	140 LysGlyAspTrpLeu      61095 CTCGGC	121 GluAsnThrProPhe ::::::     61155 GACTCGGTGCCGGT	101 GluThrPheAlaLys	81 LeuValGluThrArg     61266AAGCC	61 VallleGlySerPro	41 AspLeuGlnAlaIle :::     ::: 61356 GAAGGACAGCACGT	61416 TCGGTGTGCACCTC	40	28 Ser
	aTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGl	GlyMetLysAspLysGluProLysAlaAlaLeuSerGluGlu-ThrAspTrpLeuAspAl :::             :::	GlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGlyAlaPheValLeu 27	ValSerThrAlaGlyGlyLeuValAlaAsnAlaGlyPhe : :::	ValLeuAlaProAlaLeuAlaSerArgProSerValGlnGlyAlaValAspPheGly :	GlnValValAspMetGlyIleAlaValGlnThrPheSerAlaLeuAsnValValArgThr :::         :::         :::	AspLysLeuHisAspAlaMetAlaValSerValLysArgHisSerProAlaLeuGlyArg 205		AlaLeuSerGlyAlaMetAspGlnValGlyThrLysMet :	LysGlyAspTrpLeuAlaThrProLeuLysProLeuThrProLeuIleSerGly	GluAsnThrProPheAlaAlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsn :::::	GluThrPheAlaLysAlaGluLysPheAspArgLeuAlaThrThrAlaSerSerAlaPhe 	LeuValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThrProAlaThrIleAla : :: :	ValIleGlySerProAspGluArgAspAlaAlaLeuAlaHisAsnGluGlnIleAspAla 80 :::           ATCACCGGCTCCCCG	AspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAlaHisArgPheSer :::	TCGGTGTGCACCTCAATCGGATCGGCTGCGCGTCCGCGGGGGGGG		-SerSerValArgSerValSerThrThrSerCysArg              ::: 
	SerGlyAlaAla	uSerGluGlu-ThrAsp 	pGlnLeuArgGlyGlyA     CTGGCTGAAGCGGT	GlyLeuValAlaA         CAGTGGGTGCAGTTCGA	OSETValGlnGlyAlaV 	rPheSerAlaLeuAsnV :::     : :GATCACCTTCCTGCTG	LLysArgHisSerProA ::: AACTCAAAGAG	CCCGAGATCGG	nValGly  ::: AGATCGCGCCGCTGGAG	oLeuThrProLeuIleS :::::   ::: GTGAGCCCGGTTTCC	uGlnTyrMetGlnP     ACGACCAAATGCTCGAT	gLeuAlaThrThrAlaS :::    : CCTGGTCGGCCCTGGCC	rGluGlyGluThrProA      GGGCCGGACGTACCAGC	aLeuAlaHisAsnGluG ;;; ccATCGGCCCGCGCCGC	SHISValPheAlaAlaH         GTCAACCCTTTACCGCA	GTCCGCGGGGGGTGAAC		rThrThrSerCysArg-
	LeuAsnAlaGl 314	່ ນ	laPheValLeu 27		N E		laLeuGlyArg 20        :::  GCGTTAGGGCAA 1:			n		41	63	InIleAspAla 80 ::::: GAACTC 1:	റ		40	TTGCCGGGTGCA 1:
4	•	97 1260628	77 1260659	1260704	1260764	1260823	5 260883	.85 1260937	1260988	157 1261048	1261096	1261156	1261216	1261267	1261306	1261357		261417

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                                    US-09-825-414-66 (1-487) x US-08-682-517-13 (1-3666)
                                                                                  DB
                                                                                                 Percent Similarity:
Best Local Similarity:
Query Match:
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US-08-682-517-13
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                                                                                                                                                               Score:
                                                                                                                                                                                      Pred. No.:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 13, Application US/08682517 Patent No. 5874267 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1260202 CCGCGCCCATCGCGTCCCGCAAGCGCGACCCGCGGTTACACAATGGGCAAATCCGGGC 1260143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1260259 TCTCGCGCGTGCCCTGCGCGAC---GGACACGACGCGGTCGCCGACGAGATCGCGTCGTC 1260203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1260316 TGACGCGTTGCGGAGCTGGCCTGGCGTTCGGTGCCGAAAAGGTGCGC---GAAGTCGTCGT 1260260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1260376 CTCGACGTCGTCGACACTGCACGTGCCGTACTCGCTGGAAACCGGAAACCGACCTGGA 1260317
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                                                                                                                                                                                                                                                                                                                            CLASSIFICATION:
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 3666 base pairs
TYPE: pucleic acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TITLE OF INVENTION: Expression of surface layer proteinumber of SEQUENCES: 25
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.30 (EPO)
CURRENT APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          430 sLeuAlaLysThrValLysAspMetSerGlyGluAlaIleSerSerThrGlyAlaSerLe 450
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             390 yTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGluSerPheIleGl 410
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              410 nAspLysValLysSerThrAlaSerSerThrThrSerTyrValAlaAspGlnThrValLy 430
                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: US/08/682,517 FILING DATE:
                                                                                                                                                                                                                                                                                            TOPOLOGY: 1ir
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IleAsnGlnSerAlaGlnGlnProProGlyValAlaMetGlu-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ----TyrAlaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAspSerAl 370
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ----CTGGTGGCCGGTGCCGACACCTCGGTGGCCGGGGTACCCGAGCTGGCCGGCAAGAC 1260482
                                                                                                                                                                                                                                                                                          linear
                                                                                                                                                                                                                                                                   DNA (genomic)
                                                                                                                                                                                                                                                                                                             single
                                                                                  0.00357
125.50
32.99%
20.31%
5.21%
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                                                                                                   Conservative: Mismatches: Indels:
                                                                                                                                                               Length:
Matches:
                                                                                Gaps:
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Qy	00	Qy	ОУ	Дy	DB CY	Db Qy	pb Qy	DP OA	₽ 2	융	QΥ	DP QA	В	Qy	Db Qy	В	Qy	В	Qy	ф	Qy	망	QΨ	ф	VΩ	DЬ
274	7,067	257	2 <b>44</b> 2908	224 2881	2833	185 2785	165 2725	15 <b>5</b> 2665	2605	2545	134	117 2488	2434	97	85 2374	2314	78	2254	58_	2194	3 8	2143	18	2083	17	2023
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17 Length: 3	S-08 S-08 Seq Pat GE	Qy 401 AlaValLysLysAlaGluSerPheIleGlnAspLysValLysSeTThr	350 GlyGlyTyralaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAsp	Db 3022 GATACATTTACACAAGGTGTATTACCATCAGCAGCTACAGCAGCTGAATAT 3072  Qy 293 ASpTrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeu 311
165 GlnValGlyThrLySMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSer	Db 2488 AATGAAGTATTTGGTGAAGCGGCATTGGAAGCATTATTAACTCAATATGCAACTGAA 2544  Qy 134	Db 2254 GCTACAGGTATTGCTGTTAATAAAAAGCTATGCATTTACTGCTAAAAAAAGCT 2313  Qy 78 IleAspAlaLeuValGluThr	TACAATACTGGTGCTAATGATATTAAAGTAGATAACCAAGTTATCTCACCAAATCGTAGC PheArgThralaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerThrThr :::       :::       :::       :::   TACACAGTAACTTATGAAGCTACTTATCTTCTACA	Score: 125.50 Matches: 117  Percent Similarity: 32.99% Conservative: 73  Best Local Similarity: 20.31% Mismatches: 219  Query Match: 5.21% Indels: 167  DB: 5.21% Gaps: 25  US-09-825-414-66 (1-487) x US-08-682-517-14 (1-3666)  Qy 3 IleAsnGlnSerAlaGlnGlnProProGlyValAlaMetGlu

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US-08-682-517-7
; Sequence 7, Application
; Patent No. 5874267
; GENERAL INFORMATION:
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         APPLICATION NUMBER: US/08,
FILING DATE:
CLASSIFICATION:
INFORMATION FOR SEQ ID NO: 7:
SEQUENCE CHARACTERISTICS:
LENGTH: 4197 base pairs
TYPE: nucleic acid
                                                                                                                                                         TITLE OF INVENTION: EXPRESS NUMBER OF SEQUENCES: 25
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                        COMMOUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOTTWARE: PatentIn Release #1.0,
CURRENT APPLICATION DATA:
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US-09-825-414-66 (1-487) x US-08-682-517-7 (1-4197)
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MOLECULE TYPE:
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TCTCTTACATTAGTTGAAACTGGTGCTAATACAGGTGTATTTGCTACA---
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442 ---AlaIleSerSerThrGlyAla-----SerLeuArgSerThrVal 454
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                                                                                                                                                                                                                                                                                                                                                                                               TTTACAGCTTCTGCAACAGGTGCTACTATTACATTAACTTCTACTGTA 3805
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCCCTTTCTGTGGGTGAAAAAGTAGTTATTGATGGTGTTGAATATACTGCTGTAGCATTT 3637
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Query Match:
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INFORMATION FOR SEQ ID NO:
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LENGTH: 4197 base pairs
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2267 TACAATACTGGTGCTAATGATATTAAAGTAGATAACCAAGTTATCTCACCAAATCGTAGC 2326
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ORIGINAL SOURCE:
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136 ProAlaIleAsnLysGlyAspTrpLeuAlaThrProLeuLysProLeuThrProLeu---
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                                                                                                                                                                                                                              GTGAAATATGCTGGTGTATCAGGCAAAACATATAAATAC
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                                             GGCCAAAAAGTAACAATCTCATATAATGTAGATGGTGATACAGTTACATTTAAAGTAATT 2788
                                                                                                                                                                                  SerSerAlaPheGluAsnThrProPheAlaAlaAlaSerValLeuGlnTyr------
                                                                                                                                                                                                                                                                       AlaThrIleAlaGluThrPheAlaLysAlaGluLysPheAspArgLeuAlaThrThrAla 116
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                                                                                                                                    AATGAAGTATTTGGTGAAGCGGCATGGGAAGCATTA---TTAACTCAATATGCAACTGAA 2728
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IleAspAlaLeuValGluThr------
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Conservative:
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Indels:
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US-08-682-517-8

Sequence 8, Application Patent No. 5874267 GENERAL INFORMATION:

US/08682517

TITLE OF INVENTION: EXPINUMBER OF SEQUENCES: 25
COMPUTER READABLE FORM:
MEDIUM TYPE: F10ppy d

Expression 25

of surface

MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0,
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/682,51

Version

#1.30

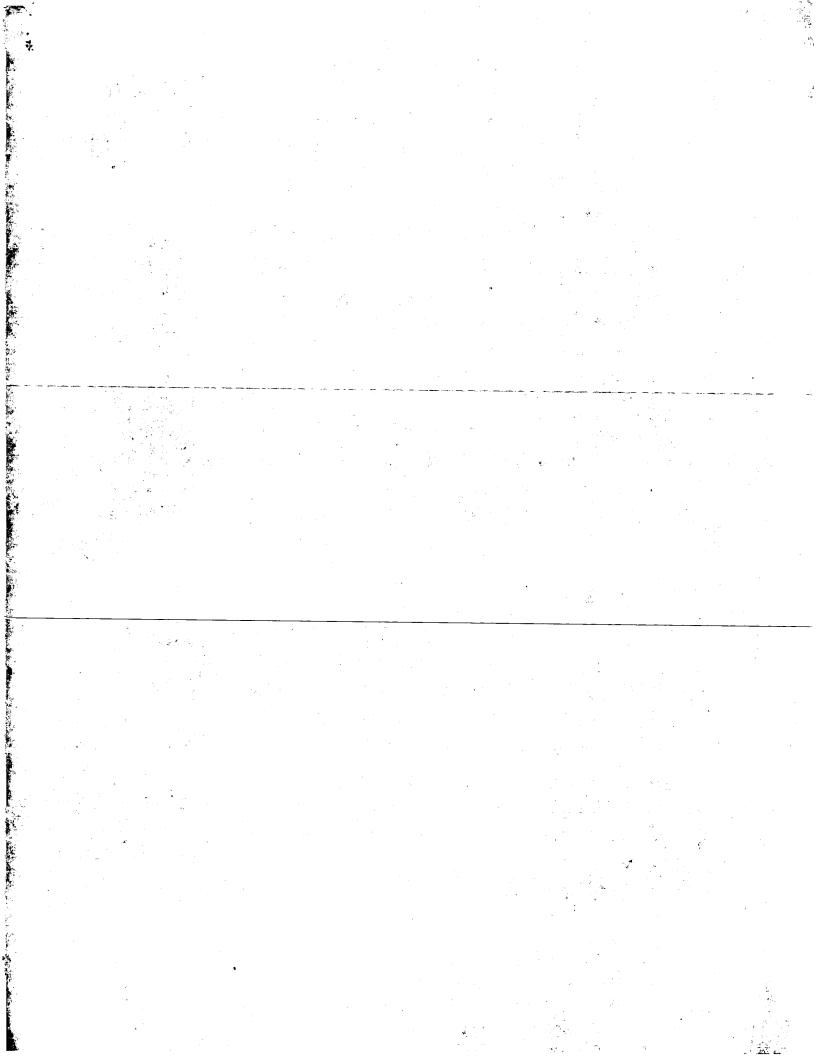
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                                                                                                                                                                                                                                                                                                                                                                    350 GlyGlyTyrAlaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAsp---
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                                                             ValAlaAspGlnThrValLysLeuAlaLysThrValLysAspMetSerGlyGlu------
                                                                                                                                                                                                                          AACGGTAAAGATCAAGTCGTTGCAGGAACAGCTGCTACAAAAGCATTCACGATTACTACA
---AlaIleSerSerThrGlyAla-----SerLeuArgSerThrVal
                                           GTAGCTGACCAAGCTGCAAATCTTGCTGCTACAATTGATACTTTAAACACTGCAGATAAG
                                                                                                                                                                                         AlaValLysLysAlaGluSerPheIleGlnAspLysValLysSerThr------
                                                                                                                                                                                                                                                      ---GlySerValGlyValPheAlaGlyTrp---ThrThrAlaGlyLeuAlaThrAspPro
                                                                                                                                                                                                                                                                                   GTTGGTTCTGAAGTTGAAGTTACATTCTCTTTTAATCAAGTATTAAATGCAGTAGTT
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ACTTCTAAATCAATTGCTGCAGATTATACATTTGCAACAGGTGAAGGATTCACTTTAAAT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           {\tt ArgThrValLeuAlaProAlaLeuAlaSerArgProSerValGlnGlyAlaValAspPhe}
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GlyArgGlnValValAspMetGlyIleAlaValGlnThrPheSerAlaLeuAsnValVal
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GCAACTAACACTTTAGGAATTTCATTAGCTGATGCAGATCTTAATGTAAGTGCAACAACT
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AGTGCTGTTAATTCTTCAACTGAAGCTATCAAACCAGTTGCTCCAACAACAACAACAGCT 2848
                                                                                                                                                                GCCCTTTCTGTGGGTGAAAAAGTAGTTATTGATGGTGTTGAATATACTGCTGTAGCATTT
                                                                                                                                                                                                                                                                                                             ----SerAlaThrLysAlaAlaValSerGlnLeuSerAsnLeuVal---
                                                                                                                                                                                                                                                                                                                                                                                                      AAAGGTGCACAAGGTGTAGCTGATGCTATCAATGCTACATTTGCAGGTACTGCAACTGTT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GATACATTTACACAAGGTGTATTA------CCATCAGCAGCTACAGCAGCTGAATAT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GlnValGlyThrLysMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSer
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AspTrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeu---
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ----GATACTGCAACTGTTTCATTAAAAGATAGTGCAAATAATTCATTA
                                                                                                                                                                                                                                                                                                                                            ----GACAAAGTAGTTATTAAATCAGCTACAACAGGT
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Percent Similarity:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence 7, Application US/09141047A Patent No. 6043085 GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/09/141,047A
CURRENT FILING DATE: 1998-08-27
NUMBER OF SEQ ID NOS: 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION: Ehrlichia canis
TITLE OF INVENTION: Protein Gene
FILE REFERENCE: D6143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Walker, David APPLICANT: Yu, Xue-Jie
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LOCATION: -340..2149
OTHER INFORMATION: Nucleotide sequence of OTHER INFORMATION: immunoreactive protein 19-141-047-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EQ ID NO 7
LENGTH: 2489
TYPE: DNA
ORGĀNISM: Ehrlichia canis
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                                                                                                                                                     1046
                                                                1100 GTTAAAGCGGAAGATTTGCAA-----
                                                                                                      126 AlaAlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  821
                    146 ThrProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGln
                                                                                                                                                                                          106 AlaGluLysPheAspArgLeuAlaThrThrAlaSerSerAlaPheGluAsnThrProPhe 125
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                                                                                                                                                     AGTGAAGTTGGAGAAAAAGTATCTGAAACTAGTAAAGAA-----
                                                                                                                                                                                                                                       CCTGAAGTTAAAGCAGAAGATTTGCAACCTGCTGTAGATGATAGTGTGGAACATTCATCA 1045
                                                                                                                                                                                                                                                                                                                                                                 GluGlnIleAspAlaLeuValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThr
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                                                                                                                                                                                                                                                                                 ProAlaThrIleAlaGluThrPhe
                                                                                                                                                                                                                                                                                                                                                                                                              ACTCCTGAAGTTAAAGCAGAAGATTTGCAACCTGCTGTAGATGGTAGTATAGAACATTCA 934
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AlaAlaHisArgPheSerValIleGly-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GAAGTTAAAGCAGAAGATTTGCAACCTGCTGTAGATGATAGTGTGGAA----
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                                                                                                                                                                                                                                                                                                                           ----TCAAGTGAAGTTGGAGAAAAAGTATCTAAAACTAGTAAAAGAAGAAAGTACT
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	451 ArgSerThrValAsnAsnLeuArgH1sArgSerAlaProGluAlaAspIleGlu 468 :::               2051AAAGAGGAAAGTACTCCTGAAGTTAAAGCGGAA 2083	Db dd
2050	2000 AGTGTGGAACATTCATCAAGTGAAGTTGGAGAAAAAGTATCTGAGACTAGT	D D
450	434 ThrValLysAspMetSerGlyGluAlaIleSerSerThrGlyAlaSerLeu	Qy
ن و	1940 AGTAAAGAAGAAGTACTCCTGAAGTTAAAGCGGAAGATTTGCAACCTGCTGTAGATGGT	당 :
دما	417 AlaSerSerThrThrSerTyrValAlaAspGlnThrValLysLeuAlaLys	δ
1939	1880 GCTGTAGATGGTAGTGTGGAACATTCATCAAGTGAAGTTGGAGAAAAAGTATCTGAGACT	밁
416	397 AlaThrAspProAlaValLysLysAlaGluSerPheIleGlnAspLysValLysSerThr	οy
1879	1826 GAAACTAGTAAGGAAAGTACTCCTGAAGTTAAAGCGGAAGATTTGCAACCT	밁
396	377 GlnLeuSerAsnLeuValGlySerValGlyValPheAlaGlyTrpThrThrAlaGlyLeu	Qy
1825	1766 CAACCTGCTGTAGATGGTAGTGTAGAACATTCATCAAGTGAAGTTGGAGAAAAAGTATCT	ઠ
376	359 GlnLysMetAlaThrLysAsnIleThrAspSerAlaThrLysAlaAlaValSer	Qy
1765	1721 ACTAGTAAAGAGGAAAATACTCCTGAAGTTAAA	밁
358	339 ThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyrAlaGlyValSerLysLeu	Qy
1720	1661 CCTGCTGTAGATGGTAGTGTAGAACATTCATCAAGTGAAGTTGGAGAAAAAGTATCTGAA	망
338	324 ValAlaThrAspGlyLeuLysAlaValArgSerLeuValSerAla	Q
1660	1601 AAAGTATCTGAAACTAGTAAAGAGGAAAATACTCCTGAAGTTAAAGCAGAAGATTTGCAA	망
323	310 AlaLeuAsnAlaGlyLysArgMetAlaGlyLeuProLeuAsp	Qy
1600	1541 GAAGATTTGCAACCTGCTGTAGATGGTAGTGTAGAACATTCATCATGAAGTTGGAGAA	DЬ
309	295 LeuAspAlaTyrLysAlaIle···LysSerAlaSerTyrSerGlyAla	Qy
1540	1481 GAAGTTGGGAAAAAAGTATCTGAAACTAGTAAAGAGGAAAGTACTCCTGAAGTTAAAGCA	DЬ
294	276 ValLeuGlyMetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAspTrp	Qγ
1480	1421 GAAGTTAAAGCAGAAGATTTGCAACCTGCTGTAGATAGTAGTATAGAACATTCATCAAGT	뫄
275	263 SerValGlnSerArgAspGlnLeuArgGlyGlyAlaPhe	Q
1420	1361 CATTCATCAAGTGAAGTTGGAGAAAAAGTATCTGAAACTAGTAAAGAGGAAAGTACTCCT	망
262	243 PheGlyValSerThrAlaGlyGlyLeuValAlaAsnAlaGlyPheGlyAspArgMetLeu	Q
1360	1310CCTGAAGTTAGAGCAGAAGATTTGCAACCTGCTGTAGATGGTAGTGTAGAA	밁
242	223 ValArgThrValLeuAlaProAlaLeuAlaSerArgProSerValGlnGlyAlaValAsp	ρ
1309	1268 GTTGGAGAAAAGTATCTGAAACTAGTAAAGAGGAAAATACT	В
222	203 LeuGlyArgGlnValValAspMetGlyIleAlaValGlnThrPheSerAlaLeuAsnVal	Qy
1267	1208 GTTAAAGCAGAAGATTTGCAACCTGCTGTAGATGATAGTGTGGAACATTCATCAAGTGAA	В
202	186 AspLysLeuHisAspAlaMetAlaValSerValLysArgHisSerProAla	Qy
1207	1160 GTTGGGAAAAAGTATCTGAAACTAGTAAAGAGGAAAGTACTCCTGAA	ర్జ
185	166 ValGlyThrLysMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerPro	Qy
1159	CAGTGTAGAACATTCATCAAGTGAA	밁



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-Q-/cgn2_1/USFTO_spoo1/US09825414/runat_28012003_161742_26139/app_query.fasta_1.1294
-Q-/cgn2_1/USFTO_spoo1/US09825414/runat_28012003_161742_26139/app_query.fasta_1.1294
-DB-Published_Applications_Na -QFMT=fastap_SUFFIX=p2n.rnpb -MINMATCH=0.1
-LOOPCL=0 -LOOPEXT=0 -UNITS=blts -START=1 -END=-1 -MATRIX=blosum62
-TARANS=human40.cd1 -LIST=45 -DOCALIGN=200 -THR_SCORE=pct -THR_MAX=100
-THR_MIN=0 -ALIGN=15 -MODE=LOCAL -OUTFMT=pto -NORM=ext -HEAPSIZE=500 -MINLEN=0
-MAXLEN=2000000000 -USER-US09825414_eCGN_1_1_46_erunat_28012003_161742_26139
-NCPU=6 -LOFU=3 -NO_MAR -LANGEMERY -NEG_SCORES=0 -WAIT -LONGLOG
-DEV_TIMEOUT=120 -WARN_TIMEOUT=30 -THREADS=1 -XGAPOP=10 -XGAPEXT=0.5 -FGAPOP=6
-FGAPEXT=7 -YGAPOP=10 -YGAPEXT=0.5 -DELOP=6 -DELEXT=7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Command line parameters:
-MODEL-frame+_p2n.model -DEV-xlp
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Maximum DB seq length: 200000000
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                                                                                                                                                                                                                                                              Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
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Ygapop 10.0 , Ygapext
Fgapop 6.0 , Fgapext
Delop 6.0 , Delext
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: /cgn2_6/ptodata/1/pubpna/US08_PUBCOMB.seq:*
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3: /cgn2_6/ptodata/1/pubpna/US60_NEW_PUB.seq:*
3: /cgn2_6/ptodata/1/pubpna/US60_PUBCOMB.seq:*
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/cgn2_6/ptodata/1/pubpna/PC7_NEW_PUB.seq:*
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Sequence 6, Appli
Sequence 1, Appli
Sequence 27, Appl
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## ALIGNMENT

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RESULT 1
US-09-825-414-65
; Sequence 65, Application US/09825414 APPLICANT: CD11mer, Alan
APPLICANT: CD11mer, Alan
APPLICANT: CA1FAROWSKI, AMY O.
TITLE OF INVENTION: HAP PATHOGENICITY ISLAND AND THEIR USES
FILE REFERENCE: 19603/3243
; CURRENT APPLICATION NUMBER: US/09/825,414
; CURRENT FILING DATE: 2001-04-03
; PRIOR APPLICATION NUMBER: 60/214,604
; PRIOR APPLICATION NUMBER: 60/224,604
; PRIOR FILING DATE: 2000-08-11
; PRIOR APPLICATION NUMBER: 60/249,548
; PRIOR FILING DATE: 2000-11-17
; NUMBER OF SEQ ID NOS: 91
; SOFTWARE: Patentin Ver. 2.1
; SEQ ID NO 65
; LENGTH: 1464
; TYPE: DNA
; ORGANISM: Pseudomonas syringae pv. tomato
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Alignment Scores:

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260 780 280 840	41 ValaspPheGlyValSerThralaGlyGlyLeuValAlaAsnAlaGlyPheGlyAspArg 2	Qy 2 Db 7 Db 7
220 660 240 720	01 ProAlaLeuGlyArgGlnValValAspMetGlyIleAlaValGlnThrPheSerAlaLeu 2	Qy 2 Db 6 Qy 2 Db 6
180 540 200 600	61 GlyAlaMetAspGlnValGlyThrLysMetMetAspArgAlaArgGlyAspLeuHisTyr 1	
140 420 160 480	21 GluAsnThrProPheAlaAlaAlaSerValLeuGlnTyrMetGlnProAlaIleAsnLys 1	Qy 1 Db 3 Qy 1 Db 4
100 300 120 360	81 LeuValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThrProAlaThrIleAla 1	Qy  Db 2  Qy 1  Db 3
60 180 80 240	41 AspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAlaHisArgPheSer 6	Qy 1 Db 1 Db 1
20 60 40 120	1 MetHislieAsnGlnSerAlaGlnGlnProProGlyValAlaMetGluSerPheArgThr 20	0y 0y
	25-414-66 (1-487) x US-09-825-414-65 (1-1464)	us-09-8
	No.: 6.63e-240 Length: 1464 2407.00 Matches: 487 it Similarity: 100.00% Conservative: 0 Ocal Similarity: 100.00% Mismatches: 0 Match: 100.00% Indels: 0 Gaps: 0	Pred. N Score: Percent Best Lo Query M DB:

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                       CTGACCCAAAACGGTCTGGCCCTGGCGGGTGGCTTTGCAGGGGTAGGCAAGTTGCAGGAG
                                      LeuThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyrAlaGlyValSerLysLeuGlnLys
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CURRENT APPLICATION NUMBER: US/09/825,414
CURRENT FILING DATE: 2001-04-03
PRIOR APPLICATION NUMBER: 60/194,160
PRIOR FILING DATE: 2000-04-03
PRIOR APPLICATION NUMBER: 60/224,604
PRIOR FILING DATE: 2000-08-11
PRIOR APPLICATION NUMBER: 60/249,548
PRIOR FILING DATE: 2000-11-17
NUMBER OF SEQ ID NOS: 91
SOFTWARE: PATENTIN VET: 2.1
SEQ ID NO 1
LENGTH: 30365
                                                                                                                     Percent Similarity:
Best Local Similarity:
Query Match:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 1, Application US/09825414 Patent No. US20020083489A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Collmer, Alan
APPLICANT: Alfano, James R.
APPLICANT: Charkowski, Amy O.
APPLICANT: Charkowski, Amy O.
TITLE OF INVENTION: DNA MOLECULES AND POLYPEPTIDES OF PSEUDOMONAS SYRINGAE
TITLE OF INVENTION: HRP PATHOGENICITY ISLAND AND THEIR USES
FILE REFERENCE: 19603/3243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -09-825-414-1/c
                                                                                                                                                                                                                                    NAME/KEY: unsure
LOCATION: (29734)
OTHER INFORMATION:
                                                                                                                                                                                                                                                                                LENGTH: 30365
TYPE: DNA
ORGANISM: Pseudomonas
FEATURE:
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                                    LeuThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyrAlaGlyValSerLysLeuGlnLys 360
                                                                                                           ProLeuAspValAlaThrAspGlyLeuLysAlaValArgSerLeuValSerAlaThrSer
                                                                                                                                                                                AspLysGluProLysAlaAlaLeuSerGluGluThrAspTrpLeuAspAlaTyrLysAla
                                                                                                                                                                                                                                                       ValAspPheGlyValSerThrAlaGlyGlyLeuValAlaAsnAlaGlyPheGlyAspArg
                                                                                                                                                                                                                                                                               GlyAspTrpLeuAlaThrProLeuLysProLeuThrProLeuIleSerGlyAlaLeuSer 160
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                                                                                                  CCACTGGATATGGCGACCGACGCAATGGGTGCGGTAAGAAGCCTGGTGTCAGCGTCCAGC
                                                                                                                                              IleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAlaGlyLeu
                                                                                                                                                                       GATAAAGAGCCCAAGGCTCAACTGAGCGAAGAAAACGACTGGCTCGAGGCTTATAAAGCA
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2273	2213	09-825	Alignment Pred. No.: Score: Percent Si Best Local Query Matc DB:	OMBE OFTW Q ID Q ID LENG TYPE ORGAL 9-97	PRIOR PRIOR PRIOR PRIOR	CURRENT CURRENT PRIOR	TITLE R	APPLIC APPLIC	APPLIC APPLIC	Patent GENERAL APPLIC		481 22547	461 22604	441 22664	421 22724	401 22784	22844
AlaSerAspAlaSerLeuAlaSerSerSerValArgSerValSerThrThrSerCysArg 40            :: ::    ::: :: ::	MetHisIleAsnGlnSerAlaGlnGlnProProGlyValAlaMetGluSerPheArgThr 20 :::::     :::   ATCAACGCCAATAGTGCTGCTGATGTCACAGCTTCACAGGCAAAGGCTACAAGTGCTGCT 2272	-414-66 (1-487) x US-09-971-536-27 (1-4645)	Scores: 2.16e-05	ARE: FastSEQ for Windows Version 4.0  NO 27  H4 4645  DNA  NISM: Lactobacillus rhamnosus  1-536-27	APPLICATION NUMBER: U.S. NO. US20020159976A1 09/724,623 FILING DATE: 2000-11-28 APPLICATION NUMBER: PCT/NZ01/00160 FILING DATE: 2001-08-08	ENT APPLICATION NUMBER: US/09/971,536 ENT FILING DATE: 2001-10-02 R APPLICATION NUMBER: U.S. NO. US20020159976A1 09/634,238 R FILING DATE: 2000-08-08	ΞO	ANT: Christensson, Anna ANT: Holland, Ross ANT: O'TOOL, Ross	ANT: Bloksberg, Leonard ANT: Lubbers, Mark ANT: Dekker, James	ANT: Havukkala, Ilkka	-536-27 -536-27 -536-27 -536-27	ProPheGlnLeuArgArg 486       :::     CCGTTTCGGCCTATGCGG 22530	SerAlaProGluAlaAspIleGluGluGlyGlyIleSerAlaPheSerArgSerGluThr 480	GluAlaIleSerSerThrGlyAlaSerLeuArgSerThrValAsnAsnLeuArgHisArg 460          :::              :::	ThrSerTyrValAlaAspGlnThrValLysLeuAlaLysThrValLysAspMetSerGly 440	AlaValLysLysAlaGluSerPheIleGlnAspLysValLysSerThrAlaSerSerThr 420	CTGGCAGGTTCGGCAGCCGTTTTCGCAGGCTGGACCACGGCCGCGCTGACAACCGATCCC 22785

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ν.	GCCGCAGCCAGTGCGACCAAGGCTG	N	Db
374	5 ValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAspSerAlaThrLysAlaAla	35	ρ
3220	1 GCTGCAAGTGCCGATGTGGTGGCAAGCAGCAGCGCCAGCACGGCTAACAGTAATGCGAGT	316	망
354	5 LeuValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyrAlaGly	33	γo
3160	GCGGCCGTTGGTTTCAGTGCTGCCAGTG	3110	망
334	roLeuAspValAlaThrAspGlyLeuLysAlaValArgSe	31:	Qy
3109	3 CAGGCTGCAAGCGAGCAAAGGCAAGCAGTAACGCGAGTGCCGCAACCAGCGCC	305	В
314	ysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGly	29	Qy
3052	3 ACCGCTGCGAGTGCGGCATCCAGCTATCCGAAGGATAGTGGGATTCAGTCACTAGCCAGT	299:	밁
294	5 PheValLeuGlyMetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAspTrp	27:	Qy
2992	::: AGTGCAGCCCAACA	293:	뮹
274	laGlyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuA	25	Qy
2932	3 TCTGCGTATGCTAGTGCTGCAAGTTCGAGTGCCAGTGAAGCCGGTTCATATGCTCATCAG	287:	ઠ
254	LAspPheGlyValSe	241	Qy
2872	3 GATTACGCAAGTGGCGCAAGCTCCAGTGCCAGCGAAGCGGTCAAGCATCGACTGCAACA	281:	망
239	roAlaLeuAlaSer	22	Qy
2812	ACTGCAGCTACAGCAAGAAGTCAAGCACTTGATGATTAGATAAGATCAAGTCTCTAACT	275	В
225	heSerAlaLeuAsnValValArg	201	Qy
2752	9AGTGCAGCTGCTGCTAGTGCAGCTCAAAGCGACTCCAAGAATAAACAAGCG	2699	밁
207	aMetAlaValSerValLysArgHisSerProAlaLeuGlyArg	18	Qy
2698	9 GTTGCAGTGAGTGATGCAGCAGCAGCGGGT	266	망
187	MetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerProAspLys	161	Qy
2668	3AGCGCAGCGTTATCGACAGCGCAAGTTGCTGCCAAG	263	В
167	rGlyAlaLeuSerGlyAlaMetAspGlnValGly	141	Qy
2632	2 AGTTCCGCTGCGGCTGCCATG	261	Дδ
147	rValLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuAlaThrPro 	12	δĀ
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127	laSerSerAlaheGluAsnThrProPheAlaAla	11	o <sub>y</sub>
2551	 AGCCGCTGCTTATGATT(	249	Дb
115	AlaGluThrPheAlaLysAlaGluLysPheAspArgLeuAlaThrThr	100	οy
2491	8 GCAATCGTGGCAAGTAGCGCGGCTAGTGAAGCGTCATCTGCAGCTGCTGCTGCTA	243	뮍
99	LeuValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThrProAlaThrIle	81	ş
2437	8 CAAATTGGTTTGGCAGCTAGCAAGTCTGCTGCTGCGGCTAGTTCCAGTGCGGCAGCGTCCGCA	237	망
90	leGlySerProAspGluArgAspAlaAlaLeuAlaHisAsnGluGlnIleAspAla	6	Ş
2377		233	망
60	AspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAlaHisArgPhe	41	Qy

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109	1499	89	72 1439		52	1346	-825-	Alignment Sc Pred. No.: Score: Sercent Simi Best Local S Query Match: DB:	TYPE: DNA ORGANISM: Moraxella 09-813-214A-8	SOFTWARE: SEQ ID NO 8	PRIOR APPLICATION NUMBER: 08/968,68 PRIOR FILING DATE: 1997-11-12 NUMBER OF SEQ ID NOS: 20	ILE RE URRENT URRENT	PPLICA ITLE O	Sequence 8, Applicat Patent No. US2002017 GENERAL INFORMATION: APPLICANT: Tucker,	SOLT 5 -09-813-	3521	473		A 5 2		נינים		415	3281	395	3248	375
PheAsp	AAAGTT	LeuTyr	LeuAla        CTTGCT	-	HisVal	AAGACT	414-66	Scores: imilari imilari l Simil	DNA ISM: Mo -214A-8	E: Pat	PPLICA ILING OF SEQ	FERENC APPLI FILIN	NT: P	8, Ap o. US2 INFORM	,21	TCA 3523	Ser 473	GCGGCA	Thrval	AAAGCT	LveThr		SerThr	GCGAGT	GlyLeu	GATAGO	Valser
PheAspArgLeuAlaThrThrAlaSe	AAAGTTACCGTAGGCAAAACC	LeuTyrSerGluGlyGluThrProAlaThrIleAlaGluThrPheAlaLysAlaGluLys	LeuAlaHisAsnGluGlnIleAspAlaLeuValGluThrArgAlaAsnArg        		HisValPheAlaAlaHisArgPheSerValIleGlySerProAspGluArgAspAlaAla 	AAGACTTTAACTATCACAGGTGGTGCACAGACCAGCGCATTAACCGAT	(1-487)	. No.: s: ent Similarity: Local Similarity: y Match:	raxell	PatentIn	TION N DATE:	E: 796 CATION	NTION:	, Application US/09 US20020177200A1 FORMATION: : Tucker, Kenneth	•	23	ω	GCGGCAGCTCAAGGCACACGAGGTGCCAAGCTCCAGTGCCAAGCGAAGCGGGTCAAGCA	ThrvalaentenardieargeralabroclualaaentlecluclucluclvclvTle	AAAGCTGCCAGCGCTGCGGAAGGCGCAGCTTCAAGTGCCGCGGAGCGCGGCTGCTAGTTCA	00000000000000000000000000000000000000	- - -	SerThrAlaSer	GCGAGTGCTGCAGCAAGCAGTGCCAAGGGTGCAGAAGCAGTTGCCAGCGAAGCGGCGAGT	GlyLeuAlaThrAspProAlaValLysLysAlaGluSerPheIleGlnAspLysValLys	GATAGCAAAGCCGCA-	ValSerGlnLeuSerAsnLeuValGlySerValGlyValPheAlaGlyTrpThrThrAla
AlaThr	GGCAAAACC	GlyGlu	TTAACC	CAI	AlaHis	ATCACA	7) x (	6.75e-05 146.50 36.00% 22.20% 6.09%		version	1997-1 1997-1	9-089- NUMBE	MORA) SEQU	7200AJ	<del>.</del>			GGCACA	Lenaro	GCTGCG	PanMot	ָאָרָלָאָרָאָרָ מַיּרְאָרָלָייִרְאָרָלָייִרְאָרָלְיִירָּאָרָלְיִירָּאָרָלְיִירָּאָרָלְיִירָּאָרָלְיִירָּאָרָלְיִירָ	;	GCAAGO	AspPro	GCA	SerAsı
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146	${\tt AlaAlaSerYalLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuAlaThr}$	127	Qy
1260	ATAGAAATTGATACTCTCATGACAAATATTCGCCGTGTTATGAATGA	1201	망
126	heAspArgLeuAlaThrThrAlaSerSerAlaPheGluAsnThrProPh	107	Qy
106 1200	AlaLysAla    AlaLysAla   ATCTCCGGTTCTTTATTCTACGGAGCTATCTCTGGACTTAAAGAAATGGTATCCCAGGCA	104	ОУ
103 1140	SerGluGlyGluThrProAlaThrIleAlaGluThrPhe	1090	Qy Db
90 1089	HisasnGluGlnIleaspalaLeuValGluThrargAlaasnargLeuTyr 	1030	Оy
73 1029	5 AlaAlaHisArgPheSerValIleGlySerProAspGluArgAspAlaAlaLeuAla 	5 <del>5</del> 970	p Q
54 969	SerThrThrSerCysArgAspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPhe	92 3 -22 -5	Дy
34 921	MetGluSerPheArgThrAlaSerAspAlaSerLeuAlaSerSerSerValArgSerVal 	15 862	Фр
	-414-66 (1-487) x US-09-932-183A-1 (1-7100)	09-825	US-
	Scores: 0.000209 Length: 7100 140.00 Matches: 128 1milarity: 33.44% Conservative: 81 1 Similarity: 20.48% Mismatches: 222 ch: 10 Gaps: 26	nent No : nt s Loca Mat	Align Pred. Score Perce Best : Query DB:
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2476	   GATAGTACCGATAATAGCTTAACCGTTAAACTTGCTAAAACTTTAAGCGATCTTGATGCG	2417	D <sub>b</sub>

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                                                                             AlaThrLysAsnIleThrAspSerAlaThrLysAlaAlaValSerGln---
                                                                                                                                                                                            TTCCTACCTCCCCTTTTAGCTGCAGTAAGCACTGCAACCCTTTTGCTCAGTAAGAATACC
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                                      GCGACTGCTGGGCTAGAAGCTGGTATGACTCGTGCAGCAGTCGCCTCAAGAGTTCTAAAA 2322
                                                                                                                 CGCACATTAGCCAGCAGCCTAATTTTGGGCACACGTGCAATGGGGGCAA---GAAACTTTA 2262
                                                                                                                                                    LeuAlaLeuAlaGly------GlyTyrAlaGlyValSerLysLeuGlnLysMet 361
                                                                                                                                                                                                                                                                                                        -----ArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLysAlaVal---
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GATCTGGCCAATTCTATCCGTAAA-----GCTGGTTCAACTGCTTCTACATTCGGGGTA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ---ArgSerLeuValSerAlaThrSer------LeuThrLysAsnGly 345
-LeuSerAsnLeuValGlySerValGlyValPheAlaGly
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US-09-738-626-2739
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US-09-738-626-2739
                                               US-09-825-414-66 (1-487) x US-09-738-626-2739
                                                                                                                       Percent Similarity:
Best Local Similarity:
                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION: NOVEL POLYNUCLEOTIDES
FILE REFERENCE: 249-125
CURRENT APPLICATION NUMBER: US/09/738,626
CURRENT FILING DATE: 2000-12-18
PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR APPLICATION NUMBER: JP 99/377484
PRIOR FILING DATE: 1999-12-16
PRIOR FILING DATE: 2000-04-07
PRIOR FILING DATE: 2000-04-07
PRIOR FILING DATE: 2000-08-03
NUMBER OF SEQ ID NOS: 7059
SOFTWARE: Patentin ver. 3.0
                                                                                                                                                                                Pred.
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                                                                                                                                                                                                                                                                                            SEQ ID NO 2739
LENGTH: 8979
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                                                                                                                                                                                                                                                                              TYPE: DNA
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7 AlaGlnGlnProProGlyValAlaMetGluSerPheArgThrAlaSerAspAlaSerLeu
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CTAATACAGCAATATAAAGAGCTTCAAAAAGTTAAAGAGTCAAGATCTTTAACTTCAGAT 2562
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GAGCAGAGCCAGCAAACCAATGTCGAAGCAATTACGACCAATAAAGACTCCACTGATAAA 2502
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OZAKI, AKIO
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SENOH, AKIHIRO
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YOKOI, HARUHIKO
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138.00
37.16%
21.68%
5.73%
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Matches:
Conservative:
Mismatches:
Indels:
Gaps:
                                               (1-8979)
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3073 GCACACACCGCACCTGACGTGCTGGTTGGCCGCGCATGGCCAGCAGTTTTCGCTGCCGTA

372	353 AlaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAspSerAlaThrLys	Qy
4092	CAGTTCACCCAGGTGGGCATGGCAACTCTGGC	망
352	euValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyr	γ
4035	Ď	망
333	laGlyLeuProLeuAspValAlaThrAspGlyLeuLysAlaValArg	Qу
3975	::: CTGGGCTTCTCCATCGTG	Db
314	leLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaGly	Qγ
3933	 	뭥
294	laAlaLeuSerGluGluThrAspTrp	Qy
3879	:::      ::: CCAGGGCATTCAGTCCCAGGGC	ф
274	GlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGlyAla	Qy
3837	GTGCTTACCGCCACCGCTGTTGTGCAGCTCCATCT	망
254	alGlnGlyAlaValAspPheGlyValSerThrAlaGlyGlyLeuValAlaAsn	Qy
3786	ACC	Вb
236	alValArgThrValLeuAlaProAlaLeuAlaSerArgProSer	Qy
3747		Db
216	erProAlaLeuGlyArgGlnValValAspMetGlyIleAlaValGlnThr	Оy
3687	::: GAGCAGATCCAAACTCCCGCAGCCAAGGTCGTGGAATACACCGCAACCATGCTG	DЬ
199	ASPLYSLeuHisAspAlaMetAlaValSerValLysArgHis	Qy
3627	GTGGACCTCTGCCATCGGTGAACTGATCGCCGGTGCAGCATTC	В
184	lnValGlyThrLysMetMetAspArgAlaArgGlyAspLeuHisTyrLeuSerThrSer	Qy
3567	GTCTCTGATGTTGCGGCTTCCCTGGCTGGTCTGCCAGGT	Ф
164	IleSerGlyAlaLeuSerGlyAlaMetAsp	Qy
3513	GAATCCATGCGCCATTCGCTGTGATCTCCGGTGAC	В
148	OAlaIleAsnLysGlyAspTrpLeuAlaThrProLeu	Qy
3471	GCACTGCCAACCACGTGGACACCCCACGCTCAGCTCGCGCAGTGGCAACCGTTGTT	B
134	rAlaPheGluAsnThrProPheAlaAlaAlaSerValLeuGlnTyrMet	οy
3411		Db
117	eAlaGluThrPheAlaLysAlaGluLysPheAspArgLeuAlaThrThrAlaSer	Qy
3351	CGTGCGCGCAGAAATCGCCGACGCAGAAGGCAAACCTGATTGCTACG	DЬ
98	nArgLeuTyrSerGluGlyGluThrProAlaThr	Qy
3291	GTTTCCGCGACTGCCGATGAGGTAGTCGATACCGACCTG	망
86	AlaLeuAlaHisAsnGluGlnIleAspAlaLeuValGluThrArgAla	Qy
3231	GTGCTCAAGTCCGATGTC	В
66	yrLeuLysHisHisValPheAlaAlaHisArgPheSerValIleGlySerProAsp	Q
3192	::: GTCATCCCAGGCACCGATTCCGCATCCGTTGTGGAAGGCATGCTGTCCCTG	Db
46	SerSerSerValArgSerValSerThrThrSerCysArgAspLeuGlnAlaIleThr	Q

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	ignment ed. No. ore: rcent s rt Loca ery Mat		Db 4519	4	4	Qy 438 Db 4369	Qy 418 Db 4333	Qy 407 Db 4273	Qy 393 Db 4213	Qy 373 Db 4153	Db 4093
-414-00 (1-407) x 02-03-3/3-331-0 (1-3300)	cores: 0.000475 Length: 132.00 Matches: 132.00 Conserve Similarity: 20.95% Mismatch 5.48% Indels: 10 Gaps:	o 6, U lo. U	GLUTHIPTOPREGINLEWARGARGLEW 487 :::	GET GLY	SerSerThrGlyAlaSerLeuArgSerThrValAsnAsnLeuArgHisArgSerAlaPro 463 :::	MetSerGlyGluAlaIle 443          	SerSerThrThrSerTyrValAlaAspGlnThrValLysLeuAlaLysThrValLysAsp 437 :::           GACAACGTTTTCGATTACGTTGCG	SerPheIleGln	ThrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGlu 406	AlaAlaValSerGinLeuSerAsnLeuValGiySerValGiyValPheAlaGiyTrpThr 392	

1081		Db
341	alAlaThrAspGlyLeuLysAlaValArgSerLeuValSerAlaThrSerLeu	õ
1024	CTGCCG	рь
321	lyLysArgMetAlaGlyLeuPro	δ
1003		뭥
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955	CGAC	밁
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895	ccecc	В
272	lyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGly	Qy
835	CGCGGCTGGCGTGAACCTGTTCACCGCCTATCCGTCGTCG	용
255	ValAlaAsnAla	Qy
775	ATCGGTGGTTACGCGACCGCCACGGCCGCGATGATCAACGACCTGTCGGAC	₽
242	AlaProAlaLeuAlaSerArgProSerValGlnGlyAlaValAsp	Qy
715	GGCCGCCTGATCGGCACCATCCTGAACGCCGCCACG	뮹
225	Thr	Qy
655	-GCCTTCGTGCGCGCCAACACGCCGTTCACGGCCGCT	밁
205	rValLysArgHisSerProAlaLeuGlyArg	Qy
619	CGCCAGGCCAACATCGACTACCTGACC	망
185	<b>JGlyAspLeuHisTyrLeuSerThrSerPro</b>	Qy
568		DЪ
165	roLeuLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGln	Qγ
547	8 GTTTCGTACGCCCAGACGGTCGCCAGCGCCTATGACAAGATCATCGGCGAACGCCGTCGCG	뭥
145	GlyAspTrpLeuAla	ΟУ
487	ACGGGC	탕
128	PheGluAsnThrProPheAlaAlaAla	γo
433	ATCAACTTCTCGATCAAC	문
111	96 ProAlaThrIleAlaGluThrPheAlaLysAlaGluLysPheAspArg	Ş
394	TTGAACGACGCGTACTACTCGAAG	g
95	ArgLeuTyrSerGluGlyGluThr	Qγ
343		망
81	AlaLeuAlaHisAsnGluGlnIleAspAlaLeu	Qy
325	TACCAGTTCTTCACCGGCGTTGCCCCGTCGGCC	рь
61		Qy
283		뭥
41		QY

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GENERAL INFORMATION:

APPLICANT: Haselbeck, Robert
APPLICANT: Ohlsen, Karl L.

APPLICANT: Ohlsen, Karl L.

APPLICANT: Tyskind, Judith W.

APPLICANT: Wall, Daniel

APPLICANT: Wall, Daniel

APPLICANT: Wall, Daniel

APPLICANT: Yamamoto, Robert T.

CURRENT APPLICATION: Identification of Essent

TITLE OF INVENTION: Prokaryotes

FILE REFERENCE: ELITRA.011A

CURRENT APPLICATION NUMBER: US/09/815,242

CURRENT FILING DATE: 2000-03-21

PRIOR APPLICATION NUMBER: 60/206,848

PRIOR APPLICATION NUMBER: 60/207,727

PRIOR APPLICATION NUMBER: 60/253,625

PRIOR APPLICATION NUMBER: 60/257,931

PRIOR APPLICATION NUMBER: 60/257,931

PRIOR APPLICATION NUMBER: 60/257,931

PRIOR APPLICATION NUMBER: 60/257,931

PRIOR APPLICATION NUMBER: 60/259,308

PRIOR FILING DATE: 2000-01-2-2

PRIOR APPLICATION NUMBER: 60/269,308

PRIOR FILING DATE: 2000-02-16

NUMBER OF SEO ID NOS: 14110
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US-09-815-242-4580
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                                                               Alignment
Pred. No.:
                                         Score:
                                                                                                                                           SOFTWARE: FastSEQ 1
SEQ ID NO 4580
LENGTH: 7104
TYPE: DNA
ORGANISM: Staphylo
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                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS:
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Conservative:
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Percent Similarity: Best Local Similarity:

Qy Db Qy	ДЬ ОУ ДЬ ОУ		2	0	Query DB: US-09- QY Db 2 QY Db 2
294 TrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAla 313	274 AlaPheValLeuGlyMetLysAspLysGluProLysAlaAlaCeuSerGluGluThrAsp 293 274 AlaPheValLeuGlyMetLysAspLysGluProLysAlaAlaCeuSerGluGluThrAsp 293 276	AlaArgGlyAspLeuHisTyrLeuSerThrSerProAspLysLeuHisAspAlaMetAla	114 ThrThrAlaSerSerAlaPheGluAsnThrProPheAlaAlaAlaSerValLeuGlnTyr 133  2452 AACGAAGAAATCTCAAAAAATTGAAAATATTACTGACTCTACTCAAACA 2499  134 MetGlnProAlaIleAsnLysGlyAspTrpLeuAlaThrProLeuLysProLeuThrPro 153  137 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	37 ThrSerCysArgAspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAla 56 :::       :::       :::         :::	Match: 5.42% Indels: 105 10 Gaps: 17
NUMBER OF SEO ID NOS: 14110  SOFTWARE: FastSEQ for Windows Version 4.0  SEO ID NO 8291  LENGTH: 7107  TYPE: DNA  ORGANISM: Staphylococcus aureus  FEATURE:  NAME/KEY: CDS  LOCATION: (1)(7107)	APPLICATION NUM FILING DATE: 20	ANT: ANT: ANT: ANT: ANT: ANT: ANT: APPLICATELING	SULT 10 -09-815- Sequence Patent the Patent Application Applicatio	Db 3109 ANTGCTGCAGCAAATACTGATGTAAATGCAAAAACTACTAATGAAAGCTACAATCGCA 3168  Qy 395 GlyLeuAlaThrAspProAlaValLysLysAlaGluSerPheIleGlnAspLysVal 413	331 AlavalargSerLeuValSeralaThrSerLeuThrLysAsnGlyLeuAlaLeuA

Qy 294 TrpLeuA	Oy 274 AlaPhev:	Qy 254 AsnAlaG Db 2764	Qy 234 Argprose	Qy 214 ValGlnThrP :::       Db 2710 ATTCAAACA-	Qy 194 ValSerV	Qy 174 Alaargc	Qy 154 LeuIleSo :::  Db 2560 ACAGTTTO	Qy 134 MetGlnP: Db 2500 AAAATGG	Qy 114 ThrThrA.  Db 2452 AACGAAG	Oy 94 GluThrP: ::: Db 2392 GTTTCTG	Qy 74 HisasnG        Db 2344 ACAAATG	Qy 57 HisargP   	Qy 37 Thrserc	Qy 23Db 2164 AAGGCAA	Qy 4 AsnGlnS	US-09-825-414-66 (1-487)	Alignment Scores: Pred. No.: Score: Percent Similarity: Best Local Similarity: Query Match: DB:	US-09-815-242-8291
TrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAla	AlaPheValLeuGlyMetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAsp 	AsnAlaGlyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGly :::       :: :: :: :: :: :: :: :: :: ::	ArgProSerValGlnGlyAlaValAspPheGlyValSerThrAlaGlyGlyLeuValAla :::    :::	ValGlnThrPheSerAlaLeuAsnValValArgThrValLeuAlaProAlaLeuAlaSer :::      ATTCAAACA	ValSerValLysArgHisSerProAlaLeuGlyArgGlnValValAspMetGlyIleAla 	AlaArgGlyAspLeuHisTyrLeuSerThrSerProAspLysLeuHisAspAlaMetAla 	LeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAspArg :::	MetGlnProAlaIleAsnLysGlyAspTrpLeuAlaThrProLeuLysProLeuThrPro	ThrThrAlaSerSerAlaPheGluAsnThrProPheAlaAlaAlaSerValLeuGlnTyr 	GluThrProAlaThrIleAlaGluThrPheAlaLysAlaGluLysPheAspArgLeuAla 	HisAsnGluGlnIleAspAlaLeuValGluThrArgAlaAsnArgLeuTyrSerGluGly        ::::: ACAAATGAAGAAGTAGCGGAAGCTATTGAA	HisargPheSerValIleGlySerProAspGluargAspAlaAlaLeuAla 	ThrSerCysArgAspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAla 	AspalaSerLeuAlaSerSerSerValArgSerValSerThr	AsnGlnSerAlaGlnGlnProProGlyValAlaMetGluSerPheArgThrAlaSer               AATGCATCATTACAAGATGAAAAAGATGTAGCAAATGATAAAATTGGTAAAATTGAAACA		0.00201 130.50 9: 33.20% rity: 20.16% 5.42%	_
sSerAlaSerTyrSerGl	GlyMetLysAspLysGluProLysAlaAlaLeuSerGlu 	PheGlyAspArgMetLeuSerValGlnSerArgAspG :::     TATAATACACGTAAACAAGAAATTCAAAATAGCAAT-	pPheGlyValSerThra] 	lValArgThrValLeuAl	aLeuGlyArgGlnValVa 	rThrSerProAspLysLe ; aGCTCAAAAGCAAGGTTT	aMetAspGlnValGlyTh ::::::    GAAGAAGTA	PTrpLeuAlaThrProLe         ACAAGCAGCAACAGCTAC	nThrProPheAlaAlaAl    ATTAC	rPheAlaLysAlaGluLy     ::: GACAACGACTGCACAAG <i>I</i>	hrargalaa	OASPGluArgASPAlaAl     ACAAATTGATCAAGCACO	eThrAspTyrLeuLysH TGCACCTGCTACAACAG	-AspAlaSerLeuAlaSerSerSerValArgSerValSerThr       :::      GATGCAGCAACAAATGCACAAGTAGAAGCCATTAAAACA	yValAlaMetGluSerP}         TGTAGCAAATGATAAAA	x US-09-815-242-8291 (1-7107)	Length: Matches: Conservative: Mismatches: Indels: Gaps:	
yAlaAlaLeuAsnAla	<pre>suSerGluGluThrAsp :::    NTACAGAA</pre>		.aGlyGlyLeuValAla   !A	aProAlaLeuAlaSer					aAlaAlaSerValLeuGlnTyr      -ATTACTGACTCTACTCAAACA						neArgThrAlaSer TGGTAAAATTGAAACA		7107 99 64 223 105	
313	293 2838	273 2799	253 2763	233 2718	213 2709	193 2649	173 2589	153 2559	133 2499	113 2451	93 2391	73 2343	56 2283	36 2223	22 2163			

PRIOR FILING DATE: 2001-02-16 NUMBER OF SEQ ID NOS: 14110 SOFTWARE: FastSEQ for Windows Version 4.0	; PRIOI ; NUMBI ; SOFTW	
RIOR FILING DATE: RIOR APPLICATION N	mm	
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PRIOR APPLICATION NUMBER: 60/206,848 PRIOR FILING DATE: 2000-05-23	; PRIO	
60/191, 3-21	; PRIO	
NT FILING DATE: 2001-03-21	CURRI	
F INVENTION: Prokaryotes FERENCE: ELITRA.011A	; TITL	
OF IN	; APPL.	
APPLICANT: Yamanoto, Robert T.	APPL	
Trawick, Joi	APPL	
Zyskind Wall D	; APPL	
APPLICANT: Haselbeck, Robert APPLICANT: Ohlsen, Kari L.	; APPL;	
ORMATION:	; Pateni ; GENER	
SULT 1: -09-81: Sequence	RESULT US-09-8; Sequen	
3346 CATACAAATGCAGAAG		
2y 445 SerThrGlyAlaSerLeuArgSerThrValAsn 455	Qy 4	
3289 GCGAAACAACTTCAAACTGAAAAACAACAGCTGATACAGCAATTGATGGTG	Db 321	
ly 425 AlaAspGlnThrValLysLeuAlaLysThrValLysAspMetSerGlyGluAlaIleSer 444	Оу 4:	
Db 3229 CAAGCGCAAGAAACAGCAATTGATGCTAATAACGGTGCAACAACAGAAGAAAAAAGCAGCT 3288	Db 32:	
414 LysSerThrAlaSerS	Qy 4:	
Db 3169 GCCATTACACCTGATGCAAATGTTAAACCAACAGCGAAACAAGCAATTGCTGATAAAGTA 3228	Db 31	
395 GlyLeuAlaThrAspProAlaValLysLysAla	Qу 39	
DD 3109 AATGCTGCAGCAAATACTGATGTAGATAATGCAAAAACTACTAATGAAGCTACAATCGCA 3168	Db 310	
2y 380 AsnLeuValGlySerValGlyValPheAlaGlyTrpThrThrAla 394	Qу 31	
<pre>2y 360 LysMetAlaThrLysAsnIleThrAspSerAlaThrLysAlaAlaValSerGlnLeuSer 379 2</pre>	Qy 30	
2989 CAAAAAGCAAGTGAACGTAAAACTGCAATTGAAGCAATGAATG	N	
)y 351 GlyTyrAlaGlyValSerLysLeu	Ωу _ 3!	
2929 GCAATTAATCAAGTACAAGCGGCAACAA	Db 297	
331 AlaValArgSerLeuValSerAlaThrSerLeuThrLysA	Qу 3:	
DD 2896GATGTAACAACAGCTAAAGACAATGGTATTGCT 2928	Db 289	
314 GlyLysArgMetAlaGlyLeuProLeu	0у 3:	
	Db 28:	

COUS AUTEUS  1.00212 Length: 6228 2.9.50 Matches: 106 2.8.8 Conservative: 91 9.318 Indels: 201 1.38% Indels: 201 1.38% Gaps: 22  x US-09-815-242-4760 (1-6228)  SerLeu	3501 275	ATTAATAATATA euArgGlyGlyAlaPhe	AGTTAG alglns	GGÀTCAA tLeuSer	GTGGCTTTAAA: GlyPheGlyAs;	3451 256	Ωу
COUS AUTEUS  100212 Length: 6228 29.50 Matches: 106 5.88% CONSETVATIVE: 91 9.31% INDEE: 151 9.31% INDEE: 151 0 CONSETVATIVE: 91 151 161 161 161 161 161 161 161 161 16	(Ji	lyLeuValAlaAsnAla :::	lyValSerThrAlaGlyG ::::::	ValAspF		241	Qy
COUS AUTEUS  1.00212 Length: 6228 29.50 Matches: 91 9.31% CONSETVATIVE: 91 9.31% Indels: 151 0.0038 CONSETVATIVE: 91 1.5201 1.38% Indels: 151 0.0038 Indels: 151 0.00	45	AACTGAAGAAAAGCAA	ACAAATGC	aagaaatt	GCT	3391	ДЬ
COUS AUTEUS  1.00212 Length: 6228 29.50 Matches: 91 5.88% CONSETVATIVE: 91 9.31% MISMATCHES: 151 10.6 5.88% CONSETVATIVE: 91 9.31% MISMATCHES: 151 10.8 SETLEU	4				-	240	Qy
COUS AUTEUS  1.00212 Length: 6228 29.50 Matches: 106 5.88% CONSERVATIVE: 91 9.31% INGELS: 201 9.31% IN	40 39	TTAAATGATTTA	SerArgProSerValGlnG ::: ::   AAGAAACAAACTGCTACAG	DAlaLeuAla   :::  CATGTAACG	~	226 3331	Db 04
COUS aureus  1.00212 Length: 106 29.50 Matches: 106 29.51 Conservative: 91 9.31% Mismatches: 201 1.38% Conservative: 91 9.31% Mismatches: 201 1.51 0 Gaps: 22  x US-09-815-242-4760 (1-6228)  SerLeu	25 33	ATGCAGTCAATCAAATC	G (	nThrPheSerAla     :::  ACTACTGCGATG		212 3274	ОУ
COUS aureus  1.00212	11 27	InValValAspMetGly :::     :::    CATTAACTGATATTGGT	SerProAlaLeuGlyArgG ::: AATACACTTAAAAATAGAG	rValLysArgHis; ;;;; ;ATAAATCGTGTC	MetAlaValSe::: AAACAAGAAGC	192 3214	Db Qy
CCUS aureus  1.00212	91 21	spAla :: AAGAG	TyrLeuSerThrSerProA ::::: AATATCAATGCTACAACTG	gGlyAspLeuHis 	Aspargalaarg	172 3154	pb Qy
CCUS AUTEUS  1.00212 Length: 6228 29.50 Matches: 106 5.88% CONSERVATIVE: 91 9.31% Mismatches: 201 9.31% Indels: 151 0 Gaps: 22  x US-09-815-242-4760 (1-6228)  x US-09-815-242-4760 (1-6228) x US-09-815-242-4760 (1-6228) 22  x US-09-815-242-4760 (1-6228) 35::::::::::::::::::::::::::::::::::::	71 15	MetMet ; ; ; TCGCAATGTTGTAAAT	AspGlnValGlyThrLys-        CAAGTTAAAACGGATA	uSerGlyAlaMet	עם ו	156 3121	Qy Db
COUS aureus  1.00212	55 12	LeuIle	LeuAlaThrProLeuLysF  ::::    AATATAGTAGTGATTCAAC	nLysGlyAspTrp ::::    TCAGGGCACACAA	ProAlaIleAsı     :: CAAGCAAAAGA	136 3070	Qy Db
COUS aureus  1.00212	35 06	Gln GCA	ProPheAlaAlaAlaSerV        GCAGCAGATA	Asn	AlaSerSerAli      GCGAAGCAAAA	116 3025	P 8
CCUS aureus  1.00212	115 3024	Thr     ACA	AlaLysAlaGluLysPheA      CAGCACAACAATTACTTG	eAlaGluThrPhe ;     CGAAGAACAACAA	ProAlaThrIl	96 2968	ОУ
CCUS aureus  1.00212 Length: 6228 29.50 Matches: 106 5.88% CONSERVATIVE: 91 9.31% Mismatches: 201 9.31% Indels: 151 0 Gaps: 22  x US-09-815-242-4760 (1-6228)  SerLeuAlaSerSerSerValArgSerValSer 35 ::::::::::::::::::::::::::::::::::::	96	. 4	ThrArgAlaAsnArgLeuT    :::     :::: ACGCAACATAATACGATAT	pAlaLeuValGlu 	GluGlnIleAs	76 2917	Дb
COUS aureus  1.00212 Length: 6228 29.50 Matches: 106 5.88% Conservative: 91 9.31% Indels: 201 9.31% Indels: 151 0 Gaps: 22  x US-09-815-242-4760 (1-6228) x US-09-815-247-4760 (1-6228) x	91	laLeuAlaHisAsn	SerProAspGluArgAspA     :::::   AAAACAGATGCAAAAAATG	SerValIle	ı Ö	56 2893	Db Qy
Cous aureus  Length: 6228 29.50 Matches: 106 5.88% Conservative: 91 9.31% Indels: 201 9.38% Indels: 151 0 Gaps: 22 x US-09-815-242-4760 (1-6228) SerieuAlaSerSerSerValArgSerValSer 35 ::::::	5	HisValPheAla	AlaIleThrAspTyrLeuL            GCAATTACACCAGCTACAA	SArgAspLeuGln ::: CAAGGAATACAA	ThrThrSerCy:	36 2848	Qу
56 28 28 Staphylococcus aureus 4760 29 20 20 20 21 20 20 20 20 20 21 21 22 23 24 25 26 27 28 28 29 20 20 21 21 22 23 24 24 24 24 24 26 26 26 27 28 29 20 20 20 20 20 20 20 20 20 20	60 US	erValSer     AAGTAAAG	GCT	pAlaSerLeu : ::::: CACAAACATTTA	ThrAlaSerAspAla       ::::: ACTGCAGCAAACACA	20 2788	Qу
560 28 55taphylococcus aureus 4760 es: 0.00212 Length: 622 129.50 Matches: 106 129.50 Conservative: 91 11arity: 19.318 Mismatches: 91 11delis: 15.388 Indels: 151 10 Gaps: 22		3	5-242-4760 (1-622	7) x US-09-8	6 (1-4	09-825	us-
60 128 Staphylococcus aureu 4760		6228 106 · · 91 201 151	:: {ve	0.0021 129.50 35.88% 19.31% 5.38%	ores: larity: lmilarity	No. No. It s Mat	Alignm Pred. Score: Percer Best I Query DB:
				coccus aureu	4760 6228 4A 4: Staphy	EQ ID NO LENGTH: TYPE: DN ORGANISN 09-815-24	;; s

RESULT 1 US-09-81 Sequen Patent GENERA APPLI APP	Qy Db 4	Oy Db 4	Qy Db 4	Qy Db 4	Qy Db 3	Qy Db 3	<b>Q</b> у Db з	Qy Db 3	Qу ДЪ 3	Qу Дъ 3	Qy Db 3	Qy Db 3	ω	Db 3
9-815-equence quence react Nerat Ner	478 201	141	438	425	408	389	369 901	35 <u>1</u>	331	319 736	304 682	284	562	502
9-815-242-8815 9-815-	SerGluThrProPheGlnLeuArgArg 486 ::::::                :::   CTCAAACGAATAGTCAGGTGAATCAA 4227	ArgHisArgSerAlaProGluAlaAspIleGluGluGlyGlyIleSerAlaPheSerArg 477	MetSerGlyGluAlaIleSerSerThrGlyAlaSerLeuArgSerThrValAsnAsnLeu 457 ::: AAGCAACAGCAAATTGATAATAGTCTTGATTCAACAGATAATGAGAAA 4140	AlaaspGlnThrValLys	PhelleGlnAspLysValLysSerThrAlaSerSerThrThrSerTyrVal 424    :::    ::: :: :: :: :: :: :: :: :: ::	AlaGlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAlaGluSer 407	SeralaThrLysAlaAlaValSerGlnLeuSerAsnLeuValGlySerValGlyValPhe 388 :::       :::	GlyTyralaGlyValSerLysLeuGlnLysMetAlaThrLysAsnIleThrAsp 368	AlaValArgSerLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGly 350	GlyLeuProLeuAspValAlaThrAspGlyLeuLys 330 :::	AlaSerTyrSerGlyAlaAlaLeuAsnAlaGlyLysArgMetAla 318     :::	ProLysAlaAlaLeuSerGluGluThrAspTrpLeuAspAlaTyrLysAlaIleLysSer 303        :::          :::            :::              :::               :::                  :::	GCGATTCAGCCAAATATTGTTAAAAAAACCTGCAGCATTAGCACAAATCAATC	  AATCAAGCTGATACAAATGCGGAAGTAGATCAAGCGCAACAATTAGGTACAAAAGCAATT 3561

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Percent Similarity:
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NAME/KEY: CDS

LOCATION: (1)...(6561)

US-09-815-242-8815
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PRIOR FILING DATE: 2000-05-23
PRIOR PELICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/242,578
PRIOR APPLICATION NUMBER: 60/243,625
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR APPLICATION NUMBER: 60/269,308
PRIOR FILING DATE: 2001-02-16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FASTSEQ for Windows Version
SEQ ID NO 8815
LENGTH: 6561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: DNA
ORGANISM: Staphylococcus
                                                                                                                                                                                                                                                                                                                                                                               2968 ---GCGACGCTCGAAGAACAACAAGCAGCACAACAATTACTTGATCAAGCTGTAGCCACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2788 ACTGCAGCAAACACATTTTAAAACGCTAATACCAATGCTGATGTTGAACAAGTAAAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           No.:
                                                                                                                                                                                                                     3070 CAAGCAAAAGATCAGGGCACACAAAATATAGTAGTGATTCAACCGGCAACA------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2848 ACAAATGCGATTCAAGGAATACAAGCAATTACACCAGCTACAAAA-----
                                                                                                                                                                                                                                                                                                                                       116 AlaSerSerAlaPheGluAsnThrProPheAlaAlaAlaSerValLeuGlnTyrMetGln
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               76 GluGinIleAspAlaLeuValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluThr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           56 AlaHisArgPheSerValIleGlySerProAspGluArgAspAlaAlaLeuAlaHisAsn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          36 ThrThrSerCysArgAspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     20 ThrAlaSerAspAlaSerLeu------AlaSerSerSerValArgSerValSer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: 60/191,078 FILING DATE: 2000-03-21
                                                                                                                                                                                                                                                                                                  GCGAAGCAAAATATTAAT-------GCAGCAGATACGAATCAAGAAGTTGCA
  MetAlaValSerValLysArgHisSerProAlaLeuGlyArgGlnValValAspMetGly :::::: ||| ::: |||
                                                            GATAAAGCGCGAGAGGCGATAACAAATATCAATGCTACAACTGGCGCGACTCGAGAAGAG
                                                                                     AspArgAlaArgGlyAspLeuHisTyrLeuSerThrSerProAspLysLeuHisAspAla
                                                                                                                                                                            SerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLys------MetMet
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                                                                            GAAGTTGCTTCACAAGCATTAGCTAAAGAAAAAGAAAAAGCACTTGCAGCTATTGACCAA 4200
                                                                                                                                                         AAGCAACAGCAAATTGATAAT------AGTCTTGATTCAACAGATAATGAGAAA 4140
                                                                                                                                                                                                                                        GAAGCTGAAGTAGTAATTAAACCAAAGGCAATTGCAGATATTGAAAAAGCTGTTAAAGAA
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                                     SerGluThrProPheGlnLeuArgArg
                                                                                                                                                                                                                                                                             ---AlaAspGlnThrValLys-------LeuAlaLysThrValLysAsp
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                                                                                                                                                                                                                                                                                                                                                                                                                                       AlaGlyTrpThrThrAlaGlyLeuAlaThrAspProAlaValLysLysAla----GluSer
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                                                                                                                  ArgHisArgSerAlaProGluAlaAspIleGluGluGlyGlyIleSerAlaPheSerArg
                                                                                                                                                                                              MetSerGlyGluAlaIleSerSerThrGlyAlaSerLeuArgSerThrValAsnAsnLeu
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CURRENT APPLICATION NUMBER: US/09/815,242
CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-26
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-05-26
PRIOR FILING DATE: 2000-0-23
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR PILING DATE: 2000-12-22
PRIOR FILING DATE: 2000-12-22
PRIOR FILING DATE: 2001-02-16
PRIOR FILING DATE: 2001-02-16
NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FASTSEQ for Windows Version 4.0
SEQ ID NO 8615
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; ORGANISM: Staphylococcus aureus
; FEATURE:
; NAME/KEY: CDS
; LOCATION: (1)...(7035)
US-09-815-242-8615
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; Sequence 8615, Application
; Patent No. US20020061569A1
; GENERAL INFORMATION:
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APPLICANT: Yamamoto, Robert T.
APPLICANT: Xu, H. Howard
TITLE OF INVENTION: Identification of Essential Genes in
TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITRA.011A
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APPLICANT: Ohlsen, Kari L.
APPLICANT: Zyskind, Judith |
APPLICANT: Wall, Daniel
APPLICANT: Trawick, John D.
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                                                                                                        aAlaHisArgPheSerValIleGlySerProAspGluArgAspAlaAlaLeuAlaHisAs 75
                                                                                                                                                                                          CysArgAspLeuGlnAlaIleThrAsp-TyrLeuLys------HisHisValPheAl 55
AAGCACAAGTGAGTCAAAATCAGAAAGTACATCCACATCGCTCAGTGACTCAACAAGTAC
                                  nGluGlnIleAspAlaLeuValGluThrArgAlaAsnArgLeuTyrSerGluGlyGluTh 95
                                                                            AGCACATCT-GCATCATTAAGTGGTTCAGAAAGCGAATCCGATTCACAAAGCATATCAAC 4442
                                                                                                                                                              TCAACGTCACTAAGCGATTCAACAAGTATATCTAAAAGTACAAGCCAATCAGGTTCAACA 4383
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Zyskind, Judith W.
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Indels:
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ı ü	CATCATTAAGTGTATCGACGTCACAAAGAAGTTCAGAAAGCGTGAGTGA	· N	Db
$\vdash$	laGlyLeuAlaThrAspProAlaValLysLysAlaGluSerPheIleGlnAspLysValL ::    ::: ::: ::: :::	(a)	Qy
5323	GCTCACAATCGATGAGTGAGTCAGTAAGCACAAGCGATTCGT	5282	Db .
394	laValSerGlnLeuSerAsnLeuValGlvSerValGlvValPheAlaGlvTrpThrThrA	374	Q E
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5247	CATTGAGCGTCTCAACGTCATTAAGAAAA	5219	Db
354	erLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGlyGlyTyrAlaG	334	Qy
5218	AAATCGATGAGTGGTTCAACAAGCGTAAGTGATTCTGGC	5179	Db
334	lyLysArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLysAlaValArgS	314	Qy
5178	TGTCAGAATCTGTAAATGATTCAGAAAGTGTAAGTGAATCTAATTCTGAAAGTGACTCA-	5120	ДЬ
314	rpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAlaG	294	Qy
5119	AGCGCAAGCATATCTGATTCACAAAGTA	5092	Db
294	laPheValLeuGlyMetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAspT	274	Qy
5091	:: CTATATCGTTAAGTGATTCGACAAGCACATCAACATCGGCTAGTGAAGTAATG	5039	Db
274	snAlaGlyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGlyA	254	Qy
5038	GTGTGAGTGATCAACATCAGACTCAACAAGTACGAGTACATCTGGTTCGATGAGTGCGT	4979	Db
254	erValGlnGlyAlaValAspPheGlyValSerThrAlaGlyGlyLeuValAlaA	236	Qу
4978	III PROBLEM TALEMENT OF THE PROBLEM TO THE PROBLE	4919	ָּלָק קַּלַ עַלָּ
ی د	TUGTAGTALATCAGCTTCAACTAGTACTTCGATGCGTACAAGTACGCTTGATTCA-CAAA	2 6 6 6 6	}
16	HisSerProAlaLeuGlyArgGlnValValAspMetGlyIleAlaValGlnT	19	Qy
4859	CACATCAAGAAGTACAAGTGCATCTGGATCGGCAAGTACATCAACATCAACAAGTGACTC	4800	DЬ
198	euHisAspAlaMetAlaValSerValLysArg	188	Qy
4799	::: ACATCAGAAAGTACAAGTGAATCCGACTCGACATCAACATCATTAAGCGATTCAC	4740	Db
188		168	ОУ
4739	TCGAATGTCGACTATTGCAAGTGAGTCAGTATCGGAAAGTACATCAGAATCTGGTTC	4683	뮍
168	$\verb"uLysProLeuThrProLeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyTh"$	148	Qу
4682		4623	дδ
148	aSerValLeuGlnTyrMetGlnProAlaIleAsnLysGlyAspTrpLeuAlaThrProLe	128	Qy
4622		4563	Db
128		108	Qу
4562	:::   ::: AGCAACTCAGGATCAGCAAGTACGTCAACATTGCTCAGTAACTCAGCAAGCGCAAGTGA	4503	dd .
108	rProAlaThrIleAlaGluThrPheAlaLysAlaGluLy	95	γQ

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APPLICANT: XU, H. HOWARD

TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Identification of Essential Genes in TITLE OF INVENTION: Prokaryotes
FILE REFERENCE: ELITA. 011A

CURRENT APPLICATION NUMBER: U5/09/815,242

CURRENT FILING DATE: 2001-03-21
PRIOR APPLICATION NUMBER: 60/191,078
PRIOR FILING DATE: 2000-03-21
PRIOR APPLICATION NUMBER: 60/206,848
PRIOR FILING DATE: 2000-05-23
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR APPLICATION NUMBER: 60/207,727
PRIOR FILING DATE: 2000-10-23
PRIOR FILING DATE: 2000-10-23
PRIOR APPLICATION NUMBER: 60/253,625
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/257,931
PRIOR APPLICATION NUMBER: 60/269,308
DBTOR FILING DATE: 2000-12-22
PRIOR APPLICATION NUMBER: 60/269,308
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; ORGANISM: Staphylococcus aureus
US-09-815-242-4761
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NUMBER OF SEQ ID NOS: 14110
SOFTWARE: FastSEQ for Windows Version
SEQ ID NO 4761
LENGTH: 7434
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 4761, Application US/09815242 Patent No. US20020061569A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5444
2296 GAAGAATTTGACGAAGTTGTTCAAGCACAAATTGATCAAGCACCTTTAAATCCTGATACA 2355
                                                                                                                                                           2236 AAAGCAATCAATGATATTAATCAAACTACACCTGCTACAACAGCTAAAGCAGCAGCTCTT 2295
                                                                                                                                                                                                                                                                                                                      2176 AAGGCAATTAAAGATATTGATGCAGCAACAACAAATGCACAAGTAGAAGCCATTAAAACA 2235
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2116 AATGCATCATTACAAGATGAAAAAGATGTAGCAAATGATAAAATTGGTAAAATTGAAACA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5504 TATCAATGAGTGATTCTACTAGTACAAGTGACTCCGACTCATTAAGTGGATCAATATCT 5562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            454 alAsnAsnLeuArgHisArgSerAlaProGluAlaAspIleGluGluGlyGlyIleSer 473
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         434
                                                                                   57
                                                                                                                                                                                                                                  37 ThrSerCysArgAspLeuGlnAlaIleThrAspTyrLeuLysHisHisValPheAlaAla 56
                                                                                                                                                                                                                                                                                                                                                                                                              23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4 AsnGlnSerAlaGlnGlnProProGlyValAlaMetGluSerPheArgThrAlaSer---
                                                                   HisArgPheSerValIleGlySerProAspGluArgAspAlaAlaLeu-----Ala 73
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   hrValLysAspMetSerGlyGluAlaIleSerSerThrGlyAlaSerLeuArgSerThrV 454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CTTCGACATCATTAAGTGGTTCAGAAAGTGTAAGCGAGTCTAGCTCGCTAAGTGATTCAA 5503
                                                                                                                                                                                                                                                                                                                                                                                                  -----AspAlaSerLeuAlaSerSerSerValArgSerValSerThr 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           : Haselbeck, Robert
: Ohlsen, Kari L.
: Zyskind, Judith W.
: Wall, Daniel
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Trawick, John D. Carr, Grant J.
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127.50
31.77%
19.13%
5.30%
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Matches:
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1 413       A 3240	GlyLeuAlaThrAspProAlaValLysLysAlaGluSerPheIleGlnAspLysVal:::	395 3181	ДУ
	AATGCTGCAGCAAACAATGATGTGGATAATGCAAAAACTACAAATGAAGCTACAATCGCA	3121	Дb
la 394	AsnLeuValGlySerValGlyValPheAlaGlyTrpThrThrAla	380	Оу
AT 3120	CAACAAGCAGCGAAAGACAAAGTGGATCAAGCAGTAGTTACTGCAAACGCTGATATAGAT	3061	Db
er 379	LysMetAlaThrLysAsnIleThrAspSerAlaThrLysAlaAlaValSerGlnLeuSer	360	Оу
AA 3060	CAAAAAGCAAGTGAACGTAAAACAGCAATTGAAGCAATGAATG	3001	Db
ln 359	GlyTyrAlaGlyValSerLysLeuGln	351	Qy
CT 3000	GCAATTAATCAAGTTCAAGCTGCCACAACTAAGAAATCGGATGCAAAAGCGGAAATCGCT	2941	DЪ
Ly 350	AlaValArgSerLeuValSerAlaThrSerLeuThrLysAsnGlyLeuAlaLeuAlaGl	331	ν
CT 2940	GATGTAACAACAGCTAAAGACAATAGTATTGCT	2908	Дb
ys 330	GlyLysArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLys	314	Qγ
3T 2907	TTAGATACTAAAAAGCAAGAAGCAAGAACAAATCTTGATGCTGCAAATACAAACAGT	2851	Db
la 313	TrpLeuAspAlaTyrLysAlaIleLysSerAlaSerTyrSerGlyAlaAlaLeuAsnAl	294	Qy
2850	GCTTCAACTACAGAAGAAAAACAAGCTGCATATACAGAA	2812	Дb
вр 293	AlaPheValLeuGlyMetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAs	274	Qy
2811	TATAATACACGTAAACAAGAAATTCAAAATAGCAAT	2776	ДĎ
Ly 273	AsnAlaGlyPheGlyAspArgMetLeuSerValGlnSerArgAspGlnLeuArgGlyGly	254	Qy
2775	CAAGCAAAAGTTAAACCTGCAGCTGATACGGAAGTAGAAAACGCA	2731	Дb
La 253	ArgProSerValGlnGlyAlaValAspPheGlyValSerThrAlaGlyGlyLeuValAla	234	Qy
2730	ATTCAAACA	2722	Db
er 233	ValGlnThrPheSerAlaLeuAsnValValArgThrValLeuAlaProAlaLeuAlaSer	214	Qy
CA 2721	GTTAAATCAAAACAGGAAGTTGCTGATACAAAATCAAAAGTATTAGATAAAATCAATGCA	2662	Дb
La 213	ValSerValLysArgHisSerProAlaLeuGlyArgGlnValValAspMetGlyIleAl	194	Qy
TT 2661	GCAGAAGCTGATGCAGCAGTAGATGCAGCTCAAAAGCAAGGTTTACATGACATCCAAGTT	2602	Db
la 193	AlaArgGlyAspLeuHisTyrLeuSerThrSerProAspLysLeuHisAspAlaMetAl	174	Qy
2601	ACAGTTTCAAATGCAACAAATGAAGAAGTA	2572	Db
cg 173	LeuIleSerGlyAlaLeuSerGlyAlaMetAspGlnValGlyThrLysMetMetAspAr	154	Qy
T 2571	AAAATGGATGCCTATAATGAAGTTAAACAAGCTGCAACAGCTAGAAAAGCTCAAAATGCT	2512	рь
ro 153	MetGlnProAlaIleAsnLysGlyAspTrpLeuAlaThrProLeuLysProLeuThrPro	134	Оу
CA 2511	AACGAAGAAATTTGAAAATTTGAAAATATTACTGACTCTACGCAAACA	2464	Db
/r 133	ThrThrAlaSerSerAlaPheGluAsnThrProPheAlaAlaAlaSerValLeuGlnTyr	114	Qy
AA 2463	GTTTCTGGTGTTAAAGCAATTGAAGCGACAACGACTGCACAAGATTTAGAAAGAGTTAAA	2404	Дb
la 113	GluThrProAlaThrIleAlaGluThrPheAlaLysAlaGluLysPheAspArgLeuAl	94	Qу
AA 2403	ACAAATGAAGAAGTAGCGGAAGCTATTGAACGTATTAATGCAGCTAAA	2356	Db
Ly 93		74	Qу

Alignment Scores:  Pred. No.:  0.00438	P2K · 22	FILING DATE: 2000-12-22 APPLICATION NUMBER: 60/269, FILING DATE: 2001-02-16 R OF SEQ ID NOS: 14110 ARE: FastSEQ for Windows Ver NO 8869 TH: 7437	PRIOR APPLICATION NUMBER: 60/206,848  PRIOR FILING DATE: 2000-05-23  PRIOR FILING DATE: 2000-05-23  PRIOR FILING DATE: 2000-05-26  PRIOR APPLICATION NUMBER: 60/242,578  PRIOR APPLICATION NUMBER: 60/242,578  PRIOR APPLICATION NUMBER: 60/253,625  PRIOR APPLICATION NUMBER: 60/253,625  PRIOR APPLICATION NUMBER: 60/257.931  PRIOR APPLICATION NUMBER: 60/257.931	ANT: Xu, H. Howard OF INVENTION: Identificatio OF INVENTION: Prokaryotes EFERENCE: ELITRA.011A TR APPLICATION NUMBER: US/99 TF FILING DATE: 2001-03-21 FILING DATE: 2000-03-21	RESULT 15 US-09-815-242-8869 ; Sequence 8869, Application US/09815242 ; Patent No. US20020061569A1 ; GENERAL INFORMATION: APPLICANT: Haselbeck, Robert APPLICANT: Ohlsen, Kari L. APPLICANT: Cyskind, Judith W. APPLICANT: Wall, Daniel APPLICANT: Trawick, John D. APPLICANT: Trawick, John D. APPLICANT: Yamamoto, Robert T.	DD 3481 AAAACAGCAATGCTCAAACGCAAGACATTACTGCTGAAGAAATTGCAGCGGCTAATGCG 3540  Qy 466 AspileGluGlyGlyIleSerAlaPheSerArgSerGlu 479	431 LeuAlaLysThrValLysAspMetSerGlyGluAlaIleSerSerThrGlyAlaSerLeu	Qy 427GlnThrValLys 430  Db 3361 ACAAATGCGGAAGTTGAAGCGGCTAAAAAAGCAGCAATTGCTAAAATTGAAGCGATTCAG 3420	Oy 414 LysSer
Db 2851TTAGATACTAAAAAGCAAGCAAGAAGCAAGAACCAAATCTTGATGCTGCAAATACAAACAGT 2907  Qy 314 GlyLysArgMetAlaGlyLeuProLeuAspValAlaThrAspGlyLeuLys 330	AlaPheValLeuGlyMetLysAspLysGluProLysAlaAlaLeuSerGluGluThrAsp :::    :::     :::    2812	2731 CAAGCAAAAGTTAAACCTGCAGCTGATACGGAAGTAGAAAACGCA	Qy 194 ValSerValLysArgHisSerProAlaLeuGlyArgclnValValAspMetGlyIleAla 213	4 LeuIleSerGlyAlaLeuSerGlyAlametAspGlnValGlyThrLySmetMetAspArg :::        ::: 2 ACAGTTTCAAATGCAACAATGAAGAAGTA	Qy 94 GluThrProAlaThrIleAlaGluThrPheAlaLysAlaGluLysPheAspArgLeuAla 113	Qy 74 HisasnGluglnIleAspAlaLeuValGluThrArgAlaAsnArgLeuTyrSerGlugly 93  [	) N	Qy 23	DB: 18  US-09-825+414-66 (1-487) x US-09-815-242-8869 (1-7437)  Qy 4 AsnglnserAlagInGInProProglyValAlaMetGluSerPheArgThrAlaSer 22

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